

# EXHIBIT 100

## THE HISTORY OF FIREARM MAGAZINES AND MAGAZINE PROHIBITIONS

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### I. INTRODUCTION

In recent years, the prohibition of firearms magazines has become an important topic of law and policy debate. This article details the history of magazines and of magazine prohibition. The article then applies the historical facts to the methodologies of leading cases that have looked to history to analyze the constitutionality of gun control laws.

Because ten rounds is an oft-proposed figure for magazine bans, Part II of the article provides the story of such magazines from the sixteenth century onward. Although some people think that multi-shot guns did not appear until Samuel Colt invented the revolver in the 1830s, multi-shot guns predate Colonel Colt by over two centuries.<sup>1</sup>

Especially because the Supreme Court's decision in *District of Columbia v. Heller*<sup>2</sup> considers whether arms are "in common use" and are "typically possessed by law-abiding citizens for lawful purposes,"<sup>3</sup> the article also pays attention to whether and when particular guns and their magazines achieved mass-market success in the United States. The first time a rifle with more than ten rounds of ammunition did so was in 1866,<sup>4</sup> and the first time a

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<sup>1</sup> See Clayton E. Cramer & Joseph Edward Olson, *Pistols, Crime, and Public Safety in Early America*, 44 WILLAMETTE L. REV. 699, 716 (2008).

<sup>2</sup> *District of Columbia v. Heller*, 554 U.S. 570 (2008).

<sup>3</sup> *Id.* at 624–25, 627.

<sup>4</sup> See *infra* notes 50–55 and accompanying text.

handgun did so was in 1935.<sup>5</sup>

The detailed history of various firearms and their magazines stops in 1979—a year which is somewhat ancient in terms of the current gun control debate. Back in 1979, revolvers still far outsold semiautomatic handguns.<sup>6</sup> No one was trying to ban so-called assault weapons,<sup>7</sup> although such guns were already well established in the market.<sup>8</sup>

For the post-1979 period, Part II briefly explains how technological improvements in recent decades have fostered the continuing popularity of magazines holding more than ten rounds

Part III of the article describes the history of magazine prohibition in the United States. Such prohibitions are of recent vintage, with an important exception: during prohibition, Michigan, Rhode Island, and the District of Columbia banned some arms that could hold more than a certain number of rounds; Ohio required a special license for such guns.<sup>9</sup> The Michigan and Rhode Island bans were repealed decades ago; the Ohio licensing law was repealed in 2014, having previously been modified and interpreted so that it banned no magazines.<sup>10</sup> The District of Columbia ban, however, remains in force today, with some revisions.<sup>11</sup>

The Supreme Court's Second Amendment decisions in *District of Columbia v. Heller* and *McDonald v. Chicago*<sup>12</sup> paid careful

<sup>5</sup> See *infra* notes 102–03 and accompanying text.

<sup>6</sup> The U.S. manufacturing figures were compiled by the Bureau of Alcohol, Tobacco & Firearms. Although they were public documents, they were not made widely available in the 1970s. The following are the full-year production data by U.S. manufacturers. The figures do not include production for sale to the military. 1973: 452,232 pistols, 1,170,966 revolvers; 1974: 399,011 pistols, 1,495,861 revolvers; 1975: 455,267 pistols, 1,425,833 revolvers; 1976: 468,638 pistols, 1,425,407 revolvers; 1977: 440,387 pistols, 1,423,984 revolvers; 1978: 499,257 pistols, 1,458,013 revolvers; 1979: 637,067 pistols, 1,531,362 revolvers; 1980: 785,105 pistols, 1,586,149 revolvers. *Statistical Tabulation of Firearms Manufactured in the United States—and Firearms Exported—as Reported Yearly by Bureau of Alcohol, Tobacco and Firearms on ATF Form 4483-A*, AM. FIREARMS INDUSTRY (Nov. 1981) at 28–29.

<sup>7</sup> See David B. Kopel, *The Great Gun Control War of the Twentieth Century—and Its Lessons for Gun Laws Today*, 39 FORDHAM URB. L.J. 1527, 1578–79 (2012) (beginning of “assault weapon” issue in the mid- and late 1980s); L. Ingram, *Restricting of Assault-Type Guns Okd by Assembly Unit*, L.A. TIMES, Apr. 9, 1985, at 3.

<sup>8</sup> Below, this article describes many models of semi-automatic rifles introduced since 1927. See *infra* notes 82–101 and accompanying text. All of them have been labeled an “assault weapon” by one or more proposed bills. See, e.g., LEGAL CMTY. AGAINST VIOLENCE, BANNING ASSAULT WEAPONS—A LEGAL PRIMER FOR STATE AND LOCAL ACTION 59–60 (2004), available at [http://smartgunlaws.org/wp-content/uploads/2012/05/Banning\\_Assault\\_Weapons\\_A\\_Legal\\_Primer\\_8.05\\_entire.pdf](http://smartgunlaws.org/wp-content/uploads/2012/05/Banning_Assault_Weapons_A_Legal_Primer_8.05_entire.pdf) (proposing a model assault weapons law).

<sup>9</sup> See *infra* notes 129–30, 134, 140 and accompanying text.

<sup>10</sup> See *infra* notes 131–33, 135–39 and accompanying text.

<sup>11</sup> See *infra* notes 140–45 and accompanying text.

<sup>12</sup> *McDonald v. City of Chi.*, 561 U.S. 742 (2010).

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attention to history. Several post-*Heller* lower court opinions in Second Amendment cases have also examined history as part of their consideration of the constitutionality of gun control statutes. Part IV of this article examines the legality of magazine bans according to the various historical standards that courts have employed.

## II. THE HISTORY OF MAGAZINES HOLDING MORE THAN TEN ROUNDS

In *District of Columbia v. Heller*, the Supreme Court ruled that the District of Columbia's handgun ban was unconstitutional partly because handguns are in "common use."<sup>13</sup> The Second Amendment protects arms that are "typically possessed by law-abiding citizens for lawful purposes."<sup>14</sup>

Magazines of more than ten rounds are older than the United States.<sup>15</sup> Box magazines date from 1862.<sup>16</sup> In terms of large-scale commercial success, rifle magazines of more than ten rounds had become popular by the time the Fourteenth Amendment was being ratified.<sup>17</sup> Handgun magazines of more than ten rounds would become popular in the 1930s.<sup>18</sup>

### A. *Why Consumers Have Always Sought to Avoid Having to Reload During Defensive Gun Use*

When a firearm being used for defense is out of ammunition, the defender no longer has a functional firearm. The Second Amendment, of course, guarantees the right to an *operable* firearm.<sup>19</sup> As the *Heller* Court explained, the Council of the District of Columbia could not require that lawfully-possessed guns be kept in an inoperable status (locked or disassembled) in the home, because doing so negates their utility with respect to "the core lawful purpose of self-defense."<sup>20</sup>

When the defender is reloading, the defender is especially vulnerable to attack. When ammunition is low but not exhausted (e.g., two or three rounds remaining), that may be insufficient to

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<sup>13</sup> *District of Columbia v. Heller*, 554 U.S. 570, 627–29 (2008).

<sup>14</sup> *Id.* at 625.

<sup>15</sup> *See infra* notes 21–24 and accompanying text.

<sup>16</sup> *See infra* note 65 and accompanying text.

<sup>17</sup> *See infra* notes 43–55, 172–73 and accompanying text.

<sup>18</sup> *See infra* notes 102–03 and accompanying text.

<sup>19</sup> *See Heller*, 554 U.S. at 630, 635 (declaring the District of Columbia's requirement that all firearms in the home be "rendered and kept inoperable at all times" as unconstitutional).

<sup>20</sup> *Id.*



deter or control the threat, especially if the threat is posed by more than one criminal. If the victim is attacked by a gang of four large people, and a few shots cause the attackers to pause, the victim needs enough reserve ammunition in the firearm to make the attackers worry that even if they rush the victim all at once, the victim will have enough ammunition to knock each attacker down. When guns are fired defensively, it is unusual for a single hit to immediately disable an attacker.

Accordingly, from the outset of firearms manufacturing, one constant goal has been to design firearms able to fire more rounds without reloading.

To this end, manufacturers have experimented with various designs of firearms and magazines for centuries. While not all of these experiments were successful in terms of mass sales, they indicated the directions where firearms development was proceeding. The first experiments to gain widespread commercial success in the United States came around the middle of the nineteenth century.

*B. Magazines of Greater than Ten Rounds are More than Four  
Hundred Years Old*

The first known firearm that was able to fire more than ten rounds without reloading was a sixteen-shooter created around 1580, using “superposed” loads (each round stacked on top of the other).<sup>21</sup> Multi-shot guns continued to develop in the next two centuries, with such guns first issued to the British army in 1658.<sup>22</sup> One early design was the eleven-round “Defence Gun,” patented in 1718 by lawyer and inventor James Puckle.<sup>23</sup> It used eleven preloaded cylinders; each pull of the trigger fired one cylinder.<sup>24</sup>

As with First Amendment technology (such as televisions or websites), the Second Amendment is not limited to the technology that existed in 1791.<sup>25</sup> The *Heller* Court properly described such an asserted limit as “bordering on the frivolous.”<sup>26</sup> But even if *Heller*

<sup>21</sup> See LEWIS WINANT, FIREARMS CURIOSA 168–70 (2009); *A 16-Shot Wheel Lock*, AMERICA’S 1ST FREEDOM (June 2014), <http://www.nrapublications.org/index.php/17739/a-16-shot-wheel-lock/> (NRA member magazine).

<sup>22</sup> Cramer & Olson, *supra* note 1, at 716.

<sup>23</sup> *Id.* at 716 & n.94.

<sup>24</sup> See *id.* at 716–17; *This Day in History: May 15, 1718*, HISTORY, <http://www.historychannel.com.au/classroom/day-in-history/600/defence-rapid-fire-gun-patented> (last visited Feb. 21, 2015).

<sup>25</sup> *Heller*, 544 U.S. at 582.

<sup>26</sup> *Id.* (“Some have made the argument, bordering on the frivolous, that only those arms in

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had created such a rule, magazines of more than ten rounds are older than the Second Amendment.

At the time that the Second Amendment was being ratified, the state of the art for multi-shot guns was the Girandoni air rifle, with a twenty-two-shot magazine capacity.<sup>27</sup> Meriwether Lewis carried a Girandoni on the Lewis and Clark expedition.<sup>28</sup> At the time, air guns were ballistically equal to powder guns in terms of bullet size and velocity.<sup>29</sup> The .46 and .49 caliber Girandoni rifles were invented around 1779 for use in European armies and were employed by elite units.<sup>30</sup> One shot could penetrate a one-inch thick wood plank or take down an elk.<sup>31</sup>

*C. The Nineteenth Century Saw Broad Commercial Success for  
Magazines Holding More than Ten Rounds*

Firearm technology progressed rapidly in the 1800s. Manufacturers were constantly attempting to produce reliable firearms with greater ammunition capacities for consumers. One notable step came in 1821 with the introduction of the Jennings multi-shot flintlock rifle, which, borrowing the superposed projectile design from centuries before, could fire twelve shots before reloading.<sup>32</sup>

Around the same time, pistol technology also advanced to permit more than ten shots being fired without reloading. “Pepperbox”

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existence in the 18th century are protected by the Second Amendment. We do not interpret constitutional rights that way. Just as the First Amendment protects modern forms of communications, and the Fourth Amendment applies to modern forms of search, the Second Amendment extends, *prima facie*, to all instruments that constitute bearable arms, even those that were not in existence at the time of the founding.” (citations omitted)).

<sup>27</sup> JIM SUPICA ET AL., TREASURES OF THE NRA NATIONAL FIREARMS MUSEUM 31 (2013).

<sup>28</sup> JIM GARRY, WEAPONS OF THE LEWIS & CLARK EXPEDITION 94 (2012).

<sup>29</sup> JOHN L. PLASTER, THE HISTORY OF SNIPING AND SHARPSHOOTING 69–70 (2008).

<sup>30</sup> See SUPICA ET AL., *supra* note 27, at 31.

<sup>31</sup> *Id.* The Lewis and Clark gun is on display at the National Rifle Association’s Sporting Arms Museum in Springfield, Missouri. Mark Yost, *The Story of Guns in America*, WALL ST. J., Sept. 3, 2014, at D5.

<sup>32</sup> NORM FLAYDERMAN, FLAYDERMAN’S GUIDE TO ANTIQUE AMERICAN FIREARMS AND THEIR VALUES 683 (9th ed. 2007) [hereinafter FLAYDERMAN’S GUIDE]. According to James S. Hutchins, historian emeritus at the National Museum of American History, Smithsonian Institution, Mr. Flayderman has been a “revered expert in antique American arms and a vast range of other Americana for half a century . . . .” James S. Hutchins, *Foreword* to NORM FLAYDERMAN, THE BOWIE KNIFE: UNSHEATHING THE AMERICAN LEGEND 7 (2004). Mr. Flayderman has been appointed as historical consultant to the U.S. Army Museum, U.S. Marine Corps Museum, and the State of Connecticut’s historic weapons collections. Andrea Valluzzo, *E. Norman Flayderman, 84; Antique Arms Expert*, ANTIQUES & ARTS WKLY. (July 2, 2013), <http://test.antiquesandthearts.com/node/185567#.VMvRAGjF8YM>.

pistols began to be produced in America in the 1830s.<sup>33</sup> These pistols had multiple barrels that would fire sequentially.<sup>34</sup> While the most common configurations were five or six shots,<sup>35</sup> some models had twelve independently-firing barrels,<sup>36</sup> and there were even models with eighteen or twenty-four independently-firing barrels.<sup>37</sup> Pepperboxes were commercially successful and it took a number of years for Samuel Colt's revolvers (also invented in the 1830s) to surpass them in the marketplace.<sup>38</sup>

The 1830s through the 1850s saw a number of different firearm designs intended to increase ammunition capacity. In 1838, the Bennett and Haviland Rifle was invented; it was a rifle version of the pepperbox, with twelve individual chambers that were manually rotated after each shot.<sup>39</sup> This would bring a new chamber, preloaded with powder and shot, into the breach, ready to be fired.<sup>40</sup> Alexander Hall and Colonel Parry W. Porter each created rifles with capacities greater than ten in the 1850s.<sup>41</sup> Hall's design had a fifteen-shot rotating cylinder (similar to a revolver), while Porter's design used a thirty-eight-shot canister magazine.<sup>42</sup>

The great breakthrough, however, began with a collaboration of Daniel Wesson (of Smith and Wesson) and Oliver Winchester. They produced the first metallic cartridge—containing the gunpowder, primer, and ammunition in a metallic case similar to modern ammunition.<sup>43</sup> Furthermore, they invented a firearms mechanism that was well suited to the new metallic cartridge: the lever

<sup>33</sup> JACK DUNLAP, AMERICAN BRITISH & CONTINENTAL PEPPERBOX FIREARMS 16 (1964).

<sup>34</sup> LEWIS WINANT, PEPPERBOX FIREARMS 7 (1952).

<sup>35</sup> See, e.g., *Pocketsize Allen and Thurber Pepperbox Revolver*, ANTIQUE ARMS, <http://aaawt.com/html/firearms/f102.html> (last visited Feb. 21, 2015).

<sup>36</sup> DOE RUN LEAD COMPANY'S MUSEUM, CATALOGUE OF CONTENTS 66 (1912).

<sup>37</sup> DUNLAP, *supra* note 33, at 148–49, 167 (describing three European eighteen-shot models and one twenty-four-shot model); SUPICA ET AL., *supra* note 27, at 33 (describing the Marietta eighteen-shot model); WINANT, *supra* note 21, at 249–50 (describing a twenty-four-shot pepperbox).

<sup>38</sup> WINANT, *supra* note 34, at 28.

<sup>39</sup> FLAYDERMAN'S GUIDE, *supra* note 32, at 711.

<sup>40</sup> See *id.*

<sup>41</sup> *Id.* at 713, 716.

<sup>42</sup> *Id.* The Porter Rifle was said to be able to fire up to sixty shots per minute. Mary Moran, *P.W. Porter, Inventor of the Porter Rifle*, DEAD MEMPHIS TALKING (April 18, 2014), <http://deadmemphistalking.blogspot.com/2014/04/pw-porter-inventor-of-porter-rifle.html> (reprinting an article from New York Post). About 1250 of these guns were produced. S.P. Fjestad, *What's It Worth? The Porter Rifle*, FIELD & STREAM, <http://www.fieldandstream.com/articles/guns/rifles/2009/01/whats-it-worth-porter-rifle> (last visited Feb. 21, 2015).

<sup>43</sup> See FLAYDERMAN'S GUIDE, *supra* note 32, at 303 (“The self-contained cartridge was a special type, the hollowed out conical bullet containing the powder, and backed by the primer.”); HAROLD F. WILLIAMSON, WINCHESTER: THE GUN THAT WON THE WEST 26–27 (1952).

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action.<sup>44</sup> Their company, the Volcanic Repeating Arms Company, introduced the lever action rifle in 1855.<sup>45</sup> This rifle had up to a thirty-round tubular magazine under the barrel that was operated by manipulating a lever on the bottom of the stock.<sup>46</sup> The lever-action allowed a shooter to quickly expel spent cartridges and ready the firearm for additional shots.<sup>47</sup> An 1859 advertisement bragged that the guns could be loaded and fire thirty shots in less than a minute.<sup>48</sup> In 1862, the Volcanic evolved into the sixteen-round Henry lever action rifle, lauded for its defensive utility.<sup>49</sup>

The Henry rifle further evolved into the Winchester repeating rifle, and the market for these firearms greatly expanded with the first gun produced under the Winchester name.<sup>50</sup> Winchester touted the Model 1866 for defense against “sudden attack either from robbers or Indians.”<sup>51</sup> According to advertising, the M1866 “can . . . be fired thirty times a minute,”<sup>52</sup> or with seventeen in the magazine and one in the chamber, “eighteen charges, which can be fired in nine seconds.”<sup>53</sup> The gun was a particularly big seller in the American West.<sup>54</sup> There were over 170,000 Model 1866s produced.<sup>55</sup>

Next came the Winchester M1873, “[t]he gun that won the West.”<sup>56</sup> The Winchester M1873 and then the M1892 were lever actions holding ten to eleven rounds in tubular magazines.<sup>57</sup> There were over 720,000 copies of the Winchester 1873 made from 1873 to

<sup>44</sup> See *Smith & Wesson History*, SMITH & WESSON, [http://www.smith-wesson.com/webapp/wcs/stores/servlet/Category4\\_750001\\_750051\\_757941\\_-1\\_757938\\_757812\\_image](http://www.smith-wesson.com/webapp/wcs/stores/servlet/Category4_750001_750051_757941_-1_757938_757812_image) (last visited Feb. 21, 2015).

<sup>45</sup> FLAYDERMAN’S GUIDE, *supra* note 32, at 304.

<sup>46</sup> *Id.* at 303; WILLIAMSON, *supra* note 43, at 13.

<sup>47</sup> WILLIAMSON, *supra* note 43, at 25. Oliver Winchester had an ownership interest in Volcanic and acquired the company in 1857. FLAYDERMAN’S GUIDE, *supra* note 32, at 300.

<sup>48</sup> WILLIAMSON, *supra* note 43, at 25.

<sup>49</sup> See *Id.*, at 28–31; Joseph Bilby, *The Guns of 1864*, AM. RIFLEMAN (May 5, 2014), <http://www.americanriflesman.org/articles/2014/5/5/the-guns-of-1864/>. About 14,000 Henry rifles were sold in 1860–66. FLAYDERMAN’S GUIDE, *supra* note 32, at 305. The Henry Rifle is still in production today. See *About Henry Repeating*, HENRY, <http://www.henryrifles.com/about-henry-repeating/> (last visited Feb. 21, 2015).

<sup>50</sup> See WILLIAMSON, *supra* note 43, at 49.

<sup>51</sup> R.L. WILSON, WINCHESTER: AN AMERICAN LEGEND 32 (1991).

<sup>52</sup> WILLIAMSON, *supra* note 43, at 49.

<sup>53</sup> LOUIS A. GARAVAGLIA & CHARLES G. WORMAN, FIREARMS OF THE AMERICAN WEST 1866–1894, at 128 (1985). The Winchester Model 1866 was produced until 1898. FLAYDERMAN’S GUIDE, *supra* note 32, at 306.

<sup>54</sup> WILSON, *supra* note 51, at 34.

<sup>55</sup> FLAYDERMAN’S GUIDE, *supra* note 32, at 306.

<sup>56</sup> *Model 1873 Short Rifle*, WINCHESTER REPEATING ARMS, <http://www.winchesterguns.com/products/catalog/detail.asp?family=027C&mid=534200> (last visited Feb. 21, 2015).

<sup>57</sup> *Id.*

1919.<sup>58</sup> Over a million of the M1892 were manufactured from 1892 to 1941.<sup>59</sup> The Italian company Uberti, which specializes in high-quality reproductions of western firearms, produces reproductions of all of the above Winchesters today.<sup>60</sup> Another iconic rifle of the latter nineteenth century was the pump action Colt Lightning rifle, with a fifteen-round capacity.<sup>61</sup>

Manufactured in Maine, the Evans Repeating Rifle came on the market in 1873.<sup>62</sup> The innovative rotary helical magazine in the buttstock held thirty-four rounds.<sup>63</sup> It was commercially successful for a while, although not at Winchester's or Colt's levels. Over 12,000 copies were produced.<sup>64</sup>

Meanwhile, the first handgun to use a detachable box magazine was the ten-round Jarre harmonica pistol, patented in 1862.<sup>65</sup> In the 1890s, the box magazine would become common for handguns.<sup>66</sup>

Pin-fire revolvers with capacities of up to twenty or twenty-one entered the market in the 1850s;<sup>67</sup> they were produced for the next half-century, but were significantly more popular in Europe than in America.<sup>68</sup> For revolvers with other firing mechanisms, there were some models with more than seventeen rounds.<sup>69</sup> The twenty-round Josselyn belt-fed chain pistol was introduced in 1866, and various other chain pistols had even greater capacity.<sup>70</sup> Chain pistols did not win much market share, perhaps in part because the large

<sup>58</sup> FLAYDERMAN'S GUIDE, *supra* note 32, at 307. The Model 1873 was Pa Cartwright's gun on the 1959 to 1973 television series *Bonanza*. SUPICA ET AL., *supra* note 27, at 108.

<sup>59</sup> FLAYDERMAN'S GUIDE, *supra* note 32, at 311. The Model 1892 was John Wayne's gun in many movies. SUPICA ET AL., *supra* note 27, at 109.

<sup>60</sup> 2014 STANDARD CATALOG OF FIREARMS: THE COLLECTOR'S PRICE & REFERENCE GUIDE, 1237 (Jerry Lee ed., 2013). The 1995 edition of this annually-published guide was relied on by the court in *Kirkland v. District of Columbia*, 70 F.3d 629, 635 n.3 (D.C. Cir. 1995).

<sup>61</sup> The original Colt held up to fifteen rounds in calibers of .32-.20, .38-.40, and .44-.40. FLAYDERMAN'S GUIDE, *supra* note 32, at 122. Uberti currently produces a modern replica of the Colt Lightning, medium frame model, of which 89,000 were produced between 1884 and 1902. *Id.*

<sup>62</sup> *Id.* at 694.

<sup>63</sup> DWIGHT B. DEMERITT, JR., MAINE MADE GUNS & THEIR MAKERS 293-95 (rev. ed. 1997); FLAYDERMAN'S GUIDE, *supra* note 32, at 694. A later iteration of the rifle held twenty-five or twenty-eight rounds in the buttstock. DEMERITT, *supra*, at 301. The American Society of Arms Collectors endorses the Demeritt book as "the definitive work for historians and collectors" of Maine guns. DEMERITT, *supra*, at vi.

<sup>64</sup> FLAYDERMAN'S GUIDE, *supra* note 32, at 694.

<sup>65</sup> WINANT, *supra* note 21, at 244-45. The magazine stuck out horizontally from the side of the firing chamber, making the handgun difficult to carry in a holster, which perhaps explains why the gun never had mass success. SUPICA ET AL., *supra* note 27, at 33.

<sup>66</sup> See *infra* notes 72-77 and accompanying text.

<sup>67</sup> SUPICA ET AL., *supra* note 27, at 48-49; WINANT, *supra* note 21, at 67-70.

<sup>68</sup> SUPICA ET AL., *supra* note 27, at 49.

<sup>69</sup> See, e.g., WINANT, *supra* note 21, at 62-63, 207-08.

<sup>70</sup> *Id.* at 204, 206.

dangling chain was such an impediment to carrying the gun.<sup>71</sup>

The semiautomatic firearm and its detachable box magazine were invented before the turn of the century. It was the latest success in the centuries-old effort to improve the reliability and capacity of multi-shot guns.

In 1896, Germany's Mauser introduced the C96 "broomhandle" pistol, which remained in production until the late 1930s, selling nearly a million to civilians worldwide.<sup>72</sup> The most common configuration was in ten-round capacity, but there were a variety of models with capacities as low as six or as high as twenty.<sup>73</sup> The latter was the Cone Hammer pistol, with twenty-round box magazine.<sup>74</sup>

The Luger semiautomatic pistol was brought to the market in 1899 (although it is commonly known as the "1900").<sup>75</sup> Through many variants, it was very popular for both civilians and the military markets, and remained in production for nearly a century.<sup>76</sup> The most common magazines were seven or eight rounds, but there was also a thirty-two-round drum magazine.<sup>77</sup>

*D. Manufacturers in the Twentieth Century Continued the Trend of Increasing Ammunition Capacity and Reliability for Civilian Firearms.*

The twentieth century saw improvements on the designs pioneered in the 1800s and expanding popularity for firearms with more than ten rounds.

<sup>71</sup> See *id.* at 205.

<sup>72</sup> JOHN W. BREATHED, JR. & JOSEPH J. SCHROEDER, JR., SYSTEM MAUSER, A PICTORIAL HISTORY OF THE MODEL 1896 SELF-LOADING PISTOL 272 (1967) (production of 1,150,000, of which "almost a million" were sold on the commercial, non-military market); see John Elliot, *A Sweeping History of the Mauser C96 Broomhandle Pistol*, GUNS.COM (Jan. 26, 2012), <http://www.guns.com/2012/01/26/a-sweeping-history-of-the-mauser-c96-broomhandle-pistol/>.

<sup>73</sup> 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 708–09.

<sup>74</sup> *Id.*; BREATHED & SCHROEDER, *supra* note 72, at 23, 30–31, 38–39, 54–55. At least between 1896 and 1905, Mauser's direct sales to the United States were small. *Id.* at 266–67.

Spain's Astra brought out its own versions of the Mauser, with several models having twenty-round magazines starting in 1928. *Id.* at 208. But these do not appear to have had much distribution in the United States. *Id.* at 266–67.

<sup>75</sup> See 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 650.

<sup>76</sup> Among the many models was the 1906 American Eagle. *Id.* at 653. George Luger's invention was licensed to many companies, including Mauser (Germany) and Vickers (England). *Id.* at 657–58. The gun was never manufactured under Luger's own name. See *id.* at 650–62.

<sup>77</sup> JEAN-NOËL MOURET, PISTOLS AND REVOLVERS 126–27 (1993); SUPICA ET AL., *supra* note 27, at 86.



Since the late 1890s, the Savage Arms Company has been one of the classic American firearms manufacturers.<sup>78</sup> In 1911, the company introduced their bolt-action Model 1911, a twenty-shot repeater with a tubular magazine in .22 short caliber.<sup>79</sup> The rifle was popular for boys and for shooting galleries.<sup>80</sup>

By the 1930s, American manufacturers such as Remington, Marlin, and Winchester were producing many tubular magazine rifles in .22 caliber.<sup>81</sup> These firearms are classic rifles for “plinking” (casual target shooting), especially popular for young people. Based on firearms catalogues from 1936 to 1971, there are over twenty such firearms models from major American manufacturers with magazines of sixteen to thirty rounds in one or more of the calibers.<sup>82</sup>

In 1927, the Auto Ordinance Company introduced their

<sup>78</sup> See *Savage Arms History*, SAVAGE ARMS, <http://www.savagearms.com/history/> (last visited Feb. 21, 2015).

<sup>79</sup> JIM PERKINS, AMERICAN BOYS' RIFLES 1890–1945, at 191 (1976).

<sup>80</sup> *Id.* Similarly, the Remington Model 12B Gallery Special was introduced in 1910, with an optional extended magazine that held twenty-five .22 shorts. ROY MARCOT, REMINGTON, “AMERICA'S OLDEST GUN MAKER” 149 (James W. Bequette & Joel J. Hutchcroft eds. 1998).

<sup>81</sup> See, e.g., 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 687–88, 870, 1343.

<sup>82</sup> Models listed in the 1936 *Shooter's Bible* include; Remington Model 34 bolt action, Remington Model 121 slide action, Remington Model 341 bolt action, Stevens No. 71 slide action, Savage Model 5 bolt action, Stevens Model 76 semiauto, Stevens-Springfield Model 86 bolt action, Winchester Model 62 slide action, and Winchester Model 61 slide action. STOGER ARMS CORP., SHOOTER'S BIBLE, 1936, at 108–09, 112, 123–24, 126–27, 140 (photo. reprint 1974).

Some additional models include: Stevens Model 87 bolt action, Remington 550 semiauto, Mossberg Model 46B bolt action, Mossberg Model 46M bolt action, Winchester Model 74 semiautomatic, Marlin 39 A lever action, and Marlin Model 81 DL bolt action. BOB BROWNELL, 2 THE GUNSMITHS MART, 1949–1950, at 212, 214, 216, 218, 221 (2011) (reprinting article from *Hunting & Fishing*, Oct. 1948).

The 1959 annual edition of the *Shooter's Bible* adds the semiautomatic Savage Model 6 to the above list. STOGER ARMS CORP., SHOOTER'S BIBLE, 1959, at 103 (1959). For some of the models previously mentioned, see *id.* at 80, 87, 91, 101.

Histories of Savage and Stevens firearms include the following not listed above: Stevens No. 66 bolt action, Stevens Model 46 bolt action, Model 1914 slide action, Savage Model 29 slide action, Savage Model 29 G slide action. JAY KIMMEL, SAVAGE AND STEVENS ARMS COLLECTOR'S HISTORY 35 (1990); BILL WEST, SAVAGE AND STEVENS ARMS, at 11–12, 13–8, 14–44, 15–10, 16–10 (1971). Savage purchased Stevens in 1920. *Savage Arms History*, *supra* note 78.

For use of the *Shooter's Bible* by the courts, see *United States v. Olson*, No. 94-30387, 1995 U.S. App. LEXIS 36973, at \*1–2 (9th Cir. Dec. 15, 1995) (stating that the book was properly used as a source for a Bureau of Alcohol, Tobacco, and Firearms agent's expert opinion); *United States v. Fisher*, 353 F.2d 396, 399 (5th Cir. 1965) (Gwin, J., dissenting) (considering information in the book to determine whether the evidence relied on by the trial court was sufficient to justify the trial court's holding); *Potter v. United States*, 167 Ct. Cl. 28, 48 n.1 (Ct. Cl. 1964) (citing the book for the history of Gabilondo firearms); *United States v. Precise Imports Corp.*, 458 F.2d 1376, 1377 (C.C.P.A. 1972) (reviewing the record produced at the trial court, which included pages from the 1967 edition of the book).

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semiautomatic rifle that used thirty-round magazines.<sup>83</sup> These rifles are still in production today.<sup>84</sup>

The M-1 carbine was invented for the citizen soldier of World War II.<sup>85</sup> Thereafter, the M-1 carbine became and has remained a popular rifle for civilians in America.<sup>86</sup> The U.S. government's Civilian Marksmanship Program, created by Congress, put nearly a quarter million of these guns into the hands of law-abiding American citizens starting in 1963, at steeply-discounted prices.<sup>87</sup> Partly using surplus government parts, the Plainfield Machine Company, Iver Johnson, and more than a dozen other companies cumulatively manufactured over 200,000 for the civilian market, starting in the late 1950s.<sup>88</sup> The standard magazines are fifteen and thirty rounds.<sup>89</sup>

The most popular rifle in American history is the AR-15 platform, a semiautomatic rifle with standard magazines of twenty or thirty rounds.<sup>90</sup> The AR-15 was brought to the market in 1963, with a

<sup>83</sup> 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 84; *T1-C*, THOMPSON, [www.auto-ordnance.com/firearms/thompson-t1-c.asp](http://www.auto-ordnance.com/firearms/thompson-t1-c.asp) (last visited Feb. 21, 2015).

<sup>84</sup> *See T1-C*, *supra* note 83.

<sup>85</sup> *See* BRUCE N. CANFIELD, BRUCE CANFIELD'S COMPLETE GUIDE TO THE M1 GARAND AND THE M1 CARBINE 163 (1999).

<sup>86</sup> *See id.* at 163, 279 (noting high desirability and demand for the firearm after the war ended); *see also* Joseph P. Tartaro, *The Great Assault Weapon Hoax*, 20 U. DAYTON L. REV. 619, 622 (1995) ("[T]he M1 carbine [is] beloved by millions of war veterans, collectors, and recreational shooters.").

<sup>87</sup> CANFIELD, *supra* note 85, at 163; LARRY L. RUTH, 2 WAR BABY! COMES HOME: THE U.S. CALIBER .30 CARBINE 575 (R. Blake Stevens ed., 1993); *About the CMP*, CIV. MARKSMANSHIP PROGRAM, <http://thecmp.org/about/> (last visited Feb. 21, 2015).

<sup>88</sup> *See* CANFIELD, *supra* note 85, at 163, 279 (noting the large quantity of surplus carbine parts and that firms created commercial carbines using these parts in the 1950s and 1960s). The largest producers were Plainfield's 112,000 from 1962 to 1978 and Iver Johnson's 96,700 from 1978 to 1992. *Post WWII Commercially Manufactured M1 Carbines (U.S.A.): Iver Johnson Arms*, M1CARBINESINC.COM, [http://www.m1carbinesinc.com/carbine\\_ij.html](http://www.m1carbinesinc.com/carbine_ij.html) (last visited Feb. 21, 2015); *Post WWII Commercially Manufactured M1 Carbines (U.S.A.): Plainfield Machine Co., Inc.*, M1CARBINESINC.COM, [http://www.m1carbinesinc.com/carbine\\_plainfield.html](http://www.m1carbinesinc.com/carbine_plainfield.html) (last visited Feb. 21, 2015). The U.S. Government sold 240,000 of its own surplus in 1963 into the Civilian Marksmanship Program. CANFIELD, *supra* note 85, at 163. Thereafter, the program (then known as "DCM"—Director of Civilian Marksmanship) sold M1s to Americans from the supply of World War II M1 carbines that had been exported to allied nations and subsequently returned to the United States when the allied nation switched to a newer type of rifle. *See* RUTH, *supra* note 87, at 575, 723. As of 2014, the Civilian Marksmanship Program's supply of carbines for sale has been exhausted. *M1 Carbine*, CIV. MARKSMANSHIP PROGRAM, <http://www.thecmp.org/Sales/carbine.htm> (last visited Feb. 21, 2015).

<sup>89</sup> RUTH, *supra* note 87, at 575.

<sup>90</sup> *See* NICHOLAS J. JOHNSON, DAVID B. KOPEL, GEORGE A. MOCSARY & MICHAEL P. O'SHEA, FIREARMS LAW AND THE SECOND AMENDMENT: REGULATION, RIGHTS, AND POLICY 12, 809 (2012) (noting the wide range of uses for the gun and its popularity). The "AR" stands for "ArmaLite Rifle." *Modern Sporting Rifle Facts*, NAT'L SHOOTING SPORTS FOUND., <http://www.nssf.org/msrf/facts.cfm> (last visited Feb. 21, 2015). ArmaLite did the initial design work on



then-standard magazine of twenty; the thirty-round standard magazine was developed a few years later.<sup>91</sup> The 1994 Supreme Court case *Staples v. United States*<sup>92</sup> described the AR-15 as “the civilian version of the military’s M-16 rifle,” and noted that many parts are interchangeable between the two guns.<sup>93</sup> The crucial distinction, explained the Court, is that the AR-15 is like all other semiautomatic firearms in that it can fire “only one shot with each pull of the trigger.”<sup>94</sup> The Court pointed out that semiautomatic firearms “traditionally have been widely accepted as lawful possessions.”<sup>95</sup> So legally speaking, the semiautomatic AR-15 is the opposite of the M-16 machine gun: “[C]ertain categories of guns—no doubt including the machineguns, sawed-off shotguns, and artillery pieces that Congress has subjected to regulation— . . . have the same quasi-suspect character we attributed to owning hand grenades . . . . But . . . guns falling outside those categories traditionally have been widely accepted as lawful possessions . . . .”<sup>96</sup>

By 1969, the AR-15 faced competition from the Armalite-180 (twenty-round optional magazine), the J&R 68 carbine (thirty rounds), and the Eagle Apache carbine (thirty rounds).<sup>97</sup>

Springfield Armory brought out the M1A semiautomatic rifle in 1974, with a twenty-round detachable box magazine.<sup>98</sup> The next year, the Ruger Mini-14 rifle was introduced, with manufacturer-supplied standard five, ten, or twenty-round detachable magazines.<sup>99</sup> Both the M1A and the Mini-14 are very popular to this day.<sup>100</sup>

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the AR-15 before selling the rights to Colt’s. ARMALITE, INC., A HISTORICAL REVIEW OF ARMALITE 3 (Jan. 4, 2010), available at <http://www.armalite.com/images/Library%5CHistory.pdf>.

<sup>91</sup> PATRICK SWEENEY, THE GUN DIGEST BOOK OF THE AR-15, at 104 (2005). About this time, the Cetme-Sport semiauto rifle with an optional twenty-round detachable box mag magazine came on the market. GUN DIGEST 1968, at 335 (John T. Amber ed., 22nd Anniversary Deluxe ed. 1967).

<sup>92</sup> *Staples v. United States*, 511 U.S. 600 (1994).

<sup>93</sup> *Id.* at 603.

<sup>94</sup> *Id.* at 602 n.1, 603.

<sup>95</sup> *See id.* at 612.

<sup>96</sup> *See id.* at 611–12.

<sup>97</sup> *See* GUN DIGEST 1970, at 294 (John T. Amber ed., 24th Anniversary Deluxe ed. 1969).

<sup>98</sup> *See* 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 1102 (noting the twenty-round box magazine); *M1A Series*, SPRINGFIELD ARMORY, <http://www.springfield-armory.com/m1a-series/> (last visited Feb. 21, 2015).

<sup>99</sup> 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 1173.

<sup>100</sup> *See* M1A Scout, *What is an M1A Rifle*, M1A RIFLES (July 2, 2009), <http://www.m1arifles.com/tag/m14/>; Shawn Skipper, *8 Things You Might Not Know About the Ruger Mini-14*, DAILY CALLER (June 3, 2014), <http://dailycaller.com/2014/06/03/8-things-you-might-not-know->

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By 1979, all of the above guns were challenged in the American market by high-quality European imports such as the Belgian FN-FAL Competition rifle (optional twenty-round magazine), the German Heckler & Koch HK-91 and HK-93 rifles (twenty rounds), the Swiss SIG AMT rifle (twenty rounds), and the Finnish Valmet M-71S rifle (thirty rounds).<sup>101</sup>

Citizen firearms with detachable magazines holding more than ten rounds were not limited to rifles, however. In 1935, Browning introduced the Hi-Power pistol.<sup>102</sup> This handgun was sold with a thirteen-round detachable magazine and is still in production.<sup>103</sup>

In Europe, more so than in America, Browning had to compete against the Spanish Gabilondo twenty-round Plus Ultra, introduced in 1925.<sup>104</sup> Spain's Arostegui, Eulogio brought out the Azul—a semiautomatic with standard magazines of ten, twenty and thirty—in 1935.<sup>105</sup>

Browning's first notable American competition came with the 1964 introduction of the Plainfield Machine Company's "Enforcer," a pistol version of the M1 carbine with a thirty-round magazine.<sup>106</sup>

A tremendous commercial success was the Beretta model 92, a nine millimeter pistol with a sixteen-round magazine, which entered the market in 1976.<sup>107</sup> In various configurations (currently the Beretta 92F) the Beretta is one of the most popular of all modern handguns.<sup>108</sup> Browning introduced another popular handgun in 1977, the fourteen-round BDA (Browning Double Action).<sup>109</sup> Also coming on the market at this time were European handguns such as Austria's L.E.S. P-18 (eighteen rounds) and

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about-the-ruger-mini-14/. Another gun introduced in 1976 also used magazines larger than fifteen. The Bingham company (from Norcross, Georgia) brought out the PPS 50 and AK-22, .22 caliber rifles with detachable magazines of fifty or twenty-nine rounds. 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 163. The PPS-50 is currently manufactured by Mitchell's Mausers. See PPS-50/22, MITCHELL'S MOUSERS, <http://www.mauser.org/pps-50-22/> (last visited Feb. 21, 2015). That the gun is still in production four decades later is impressive, but the PPS-50 never became an all-American favorite as did the M1, AR-15, M1A and the Mini-14.

<sup>101</sup> GUN DIGEST 1980, at 319–21 (Ken Warner ed., 34th Anniversary Deluxe ed. 1979). Also on the market were the Commando Arms carbine (five, fifteen, thirty or ninety rounds), and the Wilkinson Terry carbine (thirty-one rounds). *Id.* at 319, 322.

<sup>102</sup> 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 182.

<sup>103</sup> *Id.* at 432–33.

<sup>104</sup> See *id.* at 465.

<sup>105</sup> *Id.* at 72; BREATHED & SCHROEDER, *supra* note 74, at 216–17.

<sup>106</sup> See GUN DIGEST 1965, at 229 (John T. Amber eds., 19th Anniversary Deluxe ed. 1964).

<sup>107</sup> 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 121.

<sup>108</sup> *Id.* at 122. In 1985 the M9 version of this pistol became the standard U.S. military issue sidearm. *Id.* at 124.

<sup>109</sup> *Id.* at 184.

Germany's Heckler & Koch VP 70Z (also eighteen rounds).<sup>110</sup>

### *E. Magazines After 1979*

We end this story in 1979, when Jimmy Carter was President,<sup>111</sup> the Bee Gees bestrode the AM radio Top 40,<sup>112</sup> Gaston Glock was manufacturing curtain rods in his garage,<sup>113</sup> Americans were watching *Love Boat* on broadcast television,<sup>114</sup> and people on the cutting edge of technology were adopting VisiCalc, the first spreadsheet program, run from huge floppy discs.<sup>115</sup>

Long before 1979, magazines of more than ten rounds had been well established in the mainstream of American gun ownership. Indeed, they had been so established before almost everyone alive in 1979 was born.

After 1979, technological improvements continued to foster the popularity of magazines holding more than ten rounds. First of all, there were improvements across the board in manufacturing, so that magazine springs became more reliable, particularly for magazines holding up to thirty rounds. This greatly reduced the risk of a misfeed. Reliability was also enhanced by improvements in shaping the magazines' "lips"—the angled wings at the top of the magazine which guide the next round of ammunition into the firing chamber.<sup>116</sup>

Magazines of all sizes benefited from increasing use of plastic polymers in manufacturing.<sup>117</sup> Today, many magazine walls are

<sup>110</sup> See GUN DIGEST 1980, *supra* note 101, at 297–98. L.E.S. was the American partner of Austria's Steyr. The following courts have relied on one of the annual issues of GUN DIGEST: *Sturm, Ruger & Co. v. Arcadia Mach. & Tool, Inc.*, No. CV 85-8459 MRP, 1988 U.S. Dist. LEXIS 16451, at \*3–4 (C.D. Cal. Nov. 4, 1988); *A. Uberti & C. v. Leonardo*, 892 P.2d 1354, 1364 (Ariz. 1995) (discussing how the inclusion of the defendant's guns in the *Gun Digest* established that defendant had sufficient minimum contacts with the state to satisfy personal jurisdiction); *Couplin v. State*, 378 A.2d 197, 202 n.2 (Md. Ct. Spec. App. 1977); *Citizens for a Safer Cmty. v. City of Rochester*, 627 N.Y.S.2d 193, 203 n.5 (Sup. Ct. 1994).

<sup>111</sup> JULIAN E. ZELIZER, *JIMMY CARTER* 3 (2010).

<sup>112</sup> See DAVID N. MEYER, *THE BEE GEES: THE BIOGRAPHY* 213–14 (2013).

<sup>113</sup> PAUL M. BARRETT, *GLOCK: THE RISE OF AMERICA'S GUN* 13–16 (2012).

<sup>114</sup> GAVIN MACLEOD & MARK DAGOSTINO, *THIS IS YOUR CAPTAIN SPEAKING: MY FANTASTIC VOYAGE THROUGH HOLLYWOOD, FAITH & LIFE* 138–39 (2013).

<sup>115</sup> See, e.g., BOB DENTON, *THE PC PIONEERS* 97–100 (2d ed. 2014); ROBERT E. WILLIAMS & BRUCE J. TAYLOR, *THE POWER OF: VISICALC* (1981) (advising how to properly use the VisiCalc system and providing practice exercises on the system).

<sup>116</sup> See generally David Tong, *The Care, Feeding and Reliability of Semi-Automatic Pistols*, CHUCKHAWKS.COM, [http://www.chuckhawks.com/care\\_reliability\\_autopistols.htm](http://www.chuckhawks.com/care_reliability_autopistols.htm) (last visited Feb. 21, 2015).

<sup>117</sup> See, e.g., Tim Lau, *AR15/M16 Magazine Drop Test: Plastic Vs. Aluminum*, MODERN SERVICE WEAPONS, (Dec. 9, 2012), <http://modernserviceweapons.com/?p=1072> (comparing the performance of plastic and aluminum magazines).

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made from plastic, rather than metal. Closer tolerances in manufacturing, lower costs, and increased durability have all improved magazine quality and reliability.

Likewise, the vast majority of magazines today have a removable baseplate (also known as a “foot plate”).<sup>118</sup> Removal of the baseplate allows the magazine to be disassembled for cleaning (e.g., removal of gunpowder residue) or repair (e.g., replacing a worn-out spring).<sup>119</sup> The existence of a removable baseplate also makes it possible for consumers to add after-market extenders to a magazine.<sup>120</sup> These extenders may simply increase the grip length (to better fit a particular consumer’s hands), and they may also increase capacity by one, two, or three rounds.<sup>121</sup> Thus, a consumer with a ten-round factory magazine can add a two-rounder extender to create a twelve-round magazine.

Most importantly, the double-stack magazine was perfected. In some box magazines, the ammunition is contained in a single column.<sup>122</sup> In the double-stack magazine, there are two columns of ammunition, side-by-side and touching.<sup>123</sup> When the gun is used, the magazine will first reload a round from column A, then a round from column B, then from column A, and so on.<sup>124</sup>

The practical effect is this: for a handgun, a single stack magazine of seventeen rounds would stick out far below the bottom of the grip, making the gun unwieldy for carrying and holstering. With a double-stack configuration, a seventeen-round magazine can fit inside a standard full-sized handgun grip. The practical limitation of grip size (the size of the human hand) means that relatively larger capacity magazines are possible for relatively smaller cartridges. Thus, a double-stack magazine for the midsize nine millimeter round might hold up to twenty or twenty-one rounds, whereas a double-stack for the thicker .45 ACP cartridge would hold

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<sup>118</sup> Michael Shain, Expert Report and Opinion at 5–6, *Cooke v. Hickenlooper*, No. 13-cv-01300-MSK-MJW (D. Colo. Aug. 1, 2013), available at <http://coloradoguncase.org/Shain-report.pdf>. Kopel is counsel for the Colorado Sheriffs who are the plaintiffs in this case, which is currently on appeal to the Tenth Circuit.

<sup>119</sup> See Mike Wood, *3 Simple Keys to Cleaning Your Pistol Magazines*, POLICEONE.COM, July 11, 2014, <http://www.policeone.com/Officer-Safety/articles/7358758-3-simple-keys-to-cleaning-your-pistol-magazines/>.

<sup>120</sup> Michael Shain, Expert Report and Opinion at 5–7, *Cooke*, No. 13-cv-01300-MSK-MJW.

<sup>121</sup> See, e.g., *Magazine Adapters*, TOP GUN SUPPLY, <http://www.topgunsupply.com/gun-accessories-for-sale/magazine-adapters.html> (last visited Feb. 19, 2014) (selling magazine adapters that increase capacity and/or increase grip length).

<sup>122</sup> *Magazines, Clips, and Speedloaders*, FIREARMS ADVANTAGE, [http://www.firearmsadvantage.com/magazines\\_clips\\_speedloaders.html](http://www.firearmsadvantage.com/magazines_clips_speedloaders.html) (last visited Feb. 21, 2015).

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

no more than fifteen.

### III. THE HISTORY OF AMMUNITION CAPACITY BANS

An important factor in the consideration of the constitutionality of firearms laws is whether they are traditional and longstanding. For example, the *Heller* Court pointed out that “[f]ew laws in the history of our Nation have come close to the severe restriction of the District’s handgun ban.”<sup>125</sup> The handgun ban was contrasted with “longstanding” guns controls, such as those prohibiting gun possession by felons or the mentally ill.<sup>126</sup> Following *Heller*, the Tenth Circuit has explained that Second Amendment cases must consider “the rarity of state enactments in determining whether they are constitutionally permissible.”<sup>127</sup>

At the time the Second Amendment was adopted, there were no laws restricting ammunition capacity. This was not because all guns were single-shot. As detailed above, multi-shot guns predate the Second Amendment by about two hundred years, and Lewis and Clark carried a powerful twenty-two-round gun on their famous expedition.<sup>128</sup>

The first laws that restricted magazine capacity were enacted during the prohibition era, nearly a century and a half after the Second Amendment was adopted, and over half a century after the adoption of the Fourteenth Amendment. In 1927, Michigan prohibited “any machine gun or firearm which can be fired more than sixteen times without reloading.”<sup>129</sup> Also in 1927, Rhode Island banned “any weapon which shoots more than twelve shots semi-automatically without re-loading.”<sup>130</sup>

The Michigan ban was repealed in 1959.<sup>131</sup> That same year, the

<sup>125</sup> District of Columbia v. Heller, 554 U.S. 570, 629 (2008).

<sup>126</sup> *Id.* at 626, 629.

<sup>127</sup> Kerr v. Hickenlooper, 744 F.3d 1156, 1178 (10th Cir. 2014).

<sup>128</sup> See *supra* notes 21–31 and accompanying text.

<sup>129</sup> Act of June 2, 1927, No. 373, § 3, 1927 Mich. Public Acts 887, 888 (repealed 1959) (“It shall be unlawful within this state to manufacture, sell, offer for sale, or possess any machine gun or firearm which can be fired more than sixteen times without reloading . . .”). In 1931, the provision was consolidated into section 224 of the Michigan Code.

<sup>130</sup> Act of Apr. 22, 1927, ch. 1052, §§ 1, 4, 1927 R.I. Acts & Resolves 256, 256–57 (amended 1959).

<sup>131</sup> Under the 1959 revision: “Any person who shall manufacture, sell, offer for sale or possess any machine gun or firearm which shoots or is designed to shoot automatically more than 1 shot without manual reloading, by a single function of the trigger . . . shall be guilty of a felony . . .” Act of July 16, 1959, No. 175, sec. 1, § 224, 1959 Mich. Pub. Acts 249, 250. Michigan’s current statute on machine guns contains very similar language. See MICH. COMP. LAWS SERV. § 750.224 (LexisNexis 2014) (“A person shall not manufacture, sell, offer

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Rhode Island law was changed to fourteen shots, and .22 caliber rimfire guns were excluded.<sup>132</sup> The Rhode Island ammunition capacity law was fully repealed in 1975.<sup>133</sup>

The two statutes applied only to firearms, with Rhode Island only for semiautomatics. Neither statute covered a magazine that was not inserted in a firearm.

In 1933, Ohio began requiring a special permit for the possession or sale of a semiautomatic firearm with an ammunition capacity of greater than eighteen rounds.<sup>134</sup> In 1971, during a recodification of the state criminal code, an exemption for .22 caliber was added, and for other calibers the limit was raised to thirty-two or more rounds.<sup>135</sup>

Significantly, the Ohio statute was interpreted to not ban the sale of any magazine or any gun, but to forbid the simultaneous purchase of a magazine and a compatible gun.<sup>136</sup> (Of course purchase was allowed if one has the special permit.)<sup>137</sup> With or without the permit, one could buy a sixty-round magazine in Ohio.<sup>138</sup> The licensing law was fully repealed in 2014.<sup>139</sup>

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for sale or possess . . . [a] machine gun or firearm that shoots or is designed to shoot automatically more than 1 shot without manual reloading, by a single function of the trigger.”).

<sup>132</sup> Firearms Act, ch. 75, secs. 11-47-2, -8, 1959 R.I. Acts & Resolves 260, 260, 263 (amended 1975).

<sup>133</sup> This was accomplished by changing the Firearms Act’s definition of “Machine gun” to mirror the federal definition:

[A]ny weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any combination of parts designed and intended for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

Firearms Act, ch. 278, sec. 1, § 11-47-2, 1975 R.I. Pub. Laws 738, 738–39, 742 (amended 1989). Rhode Island’s definition of machine gun was changed again in 1989. Act of July 10, 1989, ch. 542, sec. 7, § 11-47-2, 1989 R.I. Pub. Laws. 1371, 1375–76 (codified at R.I. GEN. LAWS ANN. § 11-47-2 (West 2014)).

<sup>134</sup> Act of Apr. 8, 1933, No. 166, sec. 1, §§ 12819-3, -4, 1933 Ohio Laws 189, 189 (amended 1972).

<sup>135</sup> Act of Dec. 22, 1972, No. 511, sec. 1, § 2923.11, 1972 Ohio Laws 1866, 1963; OHIO REV. CODE ANN. § 2923.11 (LexisNexis 2014).

<sup>136</sup> *Ohio: Disclaimer*, BUDSGUNSHOP.COM (July. 11, 2014), [http://www.budsgunshop.com/catalog/feeds/state\\_reg/ohio\\_restrictions.pdf](http://www.budsgunshop.com/catalog/feeds/state_reg/ohio_restrictions.pdf).

<sup>137</sup> OHIO REV. CODE ANN. § 2923.17.

<sup>138</sup> See, e.g., *Surefire 60-Round High-Capacity Magazine MAG5-60*, GANDER MTN., <http://www.gandermountain.com/modperl/product/details.cgi?pdesc=SureFire-60-Round-High-Capacity-Magazine-MAG5-60&i=447625> (last visited Feb. 21, 2015) (allowing online customers to arrange for pick-up of a SureFire 60-Round High-Capacity Magazine at any of nine Ohio stores).

<sup>139</sup> H.R. 234, 2013–2014 Leg., 130th Sess. § 2 (Ohio 2014) (enacted) (repealing relevant definition statute, and taking effect Mar. 23, 2015).



The only longstanding statute banning magazines is found in the District of Columbia. In 1932, Congress passed a District of Columbia law prohibiting the possession of a firearm that “shoots automatically or semiautomatically more than twelve shots without reloading.”<sup>140</sup> In contrast, when Congress enacted the National Firearms Act of 1934 to impose stringent regulations on machine guns, it chose to impose no restrictions on magazines.<sup>141</sup> When the District of Columbia achieved home rule in 1975,<sup>142</sup> the district council did not choose to repeal the law but instead promptly enacted the bans on handguns and on self-defense with any gun in the home,<sup>143</sup> which were later ruled unconstitutional by the Supreme Court in *Heller*.<sup>144</sup> The District of Columbia interpreted the magazine law so that it outlawed all detachable magazines and all semiautomatic handguns.<sup>145</sup> The District stands alone in its historical restriction of magazines.

The only widespread restriction on magazine capacity came in 1994 when Congress enacted a ban on new magazines holding more than ten rounds.<sup>146</sup> The law was in effect until 2004, at which point Congress allowed it to sunset.<sup>147</sup> The effects of this law were studied extensively in a series of U.S. Department of Justice reports authored by Doctor Christopher Koper and two others. The final report, issued in 2004, concluded: “there has been no discernible reduction in the lethality and injuriousness of gun violence, based on indicators like the percentage of gun crimes resulting in death or the share of gunfire incidents resulting in injury . . . .”<sup>148</sup> Further,

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<sup>140</sup> Act of July 8, 1932, Pub. L. No. 72-275, §§ 1, 8, 47 Stat. 650, 650, 652.

<sup>141</sup> National Firearms Act, Pub. L. 73-474, 48 Stat. 1236 (1934).

<sup>142</sup> *D.C. Home Rule*, COUNCIL D.C., <http://dccouncil.us/pages/dc-home-rule> (last visited Feb. 21, 2015).

<sup>143</sup> See Firearms Control Regulations Act of 1975, No. 1-142, § 201, 23 D.C. Reg. 1091, 1097 (July 23, 1976).

<sup>144</sup> See *supra* notes 13–14, 19–20 and accompanying text.

<sup>145</sup> See VIVIAN S. CHU, DC GUN LAWS AND PROPOSED AMENDMENTS 5–6 (2011) (“Prior to *Heller*, the DC Code’s definition of ‘machine gun’ included ‘any firearm, which shoots, is designed to shoot or can be readily converted to shoot . . . semiautomatically, more than 12 shots without manual reloading.’ By virtue of this broad definition, any semiautomatic weapon that could shoot more than 12 shots without manual reloading, whether pistol, rifle, or shotgun, was deemed a ‘machine gun,’ and prohibited from being registered. It appears that under the District’s old definition, registration of a pistol was largely limited to revolvers.” (quoting D.C. Code § 7-2501.01(10) (LexisNexis 2008))).

<sup>146</sup> Violent Crime Control and Law Enforcement Act of 1994, Pub. L. 103-322, § 110103(a)–(b), 108 Stat. 1796, 1998–99.

<sup>147</sup> § 110105, 108 Stat. at 2000.

<sup>148</sup> CHRISTOPHER S. KOPER ET AL., AN UPDATED ASSESSMENT OF THE FEDERAL ASSAULT WEAPONS BAN: IMPACTS ON GUN MARKETS AND GUN VIOLENCE, 1994–2003, at 96 (2004), available at <https://www.ncjrs.gov/pdffiles1/nij/grants/204431.pdf>.

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“the ban has not yet reduced the use of [such magazines] in crime . . . .”<sup>149</sup> Doctor Koper noted also that state-level firearm bans have not had an impact on crime.<sup>150</sup>

In the modern era, only a few states have enacted magazine restrictions, starting with New Jersey’s 1990 ban on magazines over fifteen rounds.<sup>151</sup> That ban applies only to detachable box magazines for semiautomatic firearms.<sup>152</sup> A couple years later, Hawaii banned handgun magazines over twenty rounds, and later reduced that to ten.<sup>153</sup> Maryland in 1994 banned the sale or manufacture of magazines over twenty rounds; the ban did not affect possession, loans, acquisition, or importation.<sup>154</sup> The Maryland limit was reduced to ten in 2013.<sup>155</sup>

In 1999 California banned the sale of magazines over ten rounds but allowed grandfathered possession, and New York did the same in 2000.<sup>156</sup> (Currently, large capacity magazine bans in Colorado, Connecticut, and Massachusetts also have grandfather provisions, while New Jersey, the District of Columbia, and Hawaii do not.)<sup>157</sup> In 2013 New York removed grandfathering and reduced the limit to seven.<sup>158</sup> The seven-round limit was suspended shortly thereafter, since there are no seven-round magazines available for many guns.<sup>159</sup> Instead, the legislature forbade owners of ten-round magazines to load more than seven rounds.<sup>160</sup> This restriction was

<sup>149</sup> *Id.* at 2.

<sup>150</sup> *Id.* at 81 n.95.

<sup>151</sup> Act of May 30, 1990, ch. 32, §§ 2C:39-1(y), -3(j), 1990 N.J. Laws 217, 221, 235 (codified at N.J. STAT. ANN. § 2C:39-1(y), -3(j) (West 2014)).

<sup>152</sup> § 2C:39-1(y). There is an exemption for certain competitive target shooters. *Id.* § 2C:39-3(j).

<sup>153</sup> Act of June 29, 1992, ch. 286, sec. 3, § 134-8, 1992 Haw. Sess. Laws 740, 742 (codified at HAW. REV. STAT. ANN. § 134-8 (LexisNexis 2014)).

<sup>154</sup> Act of May 26, 1994, ch. 456, § 36H-5, 1994 Md. Laws 2119, 2165 (amended 2013).

<sup>155</sup> See Firearm Safety Act of 2013, ch. 427, § 4-305, 2013 Md. Laws 4195, 4210 (codified at MD. CODE ANN., CRIM. LAW § 4-305 (LexisNexis 2014)).

<sup>156</sup> See Act of July 19, 1999, ch. 129, sec. 3, § 12020(a)(2), (c)(25), 1999 Cal. Stat. 1781, 1785, 1793 (repealed 2012); Act of Aug. 8, 2000, ch. 189, sec. 11, § 265.02(8), 2000 N.Y. Laws 2788, 2793 (amended 2013).

<sup>157</sup> *Large Capacity Ammunition Magazines Policy Summary*, L. CENTER TO PREVENT GUN VIOLENCE (May 31, 2013), <http://smartgunlaws.org/large-capacity-ammunition-magazines-policy-summary/>; see *supra* notes 158, 165 and accompanying text.

<sup>158</sup> Act of Jan. 15, 2013, ch. 1, secs. 38, 46-a, §§ 265.00.23, 265.36, 2013 N.Y. Laws 1, 16, 19 (codified at N.Y. PENAL LAW § 265.36 (McKinney 2014)).

<sup>159</sup> Freeman Klopott, *Cuomo’s 7-Bullet Limit to Be Suspended Indefinitely, Skelos Says*, BLOOMBERG (Mar. 24, 2013), <http://www.bloomberg.com/news/2013-03-25/cuomo-s-7-bullet-limit-to-be-suspended-indefinitely-skelos-says.html>.

<sup>160</sup> PENAL §§ 265.36–.37; OFFICE OF DIV. COUNSEL, GUIDE TO THE NEW YORK SAFE ACT FOR MEMBERS OF THE DIVISION OF STATE POLICE 7, 9 (2013), *available at* [http://www.nypdcea.org/pdfs/NYSP\\_Safe\\_Act\\_Field\\_Guide.pdf](http://www.nypdcea.org/pdfs/NYSP_Safe_Act_Field_Guide.pdf).



declared to violate the Second Amendment in a federal district court decision.<sup>161</sup> New York City outlaws rifle or shotgun magazines holding more than five rounds.<sup>162</sup>

Also in 2013, Colorado enacted a ban on magazines over fifteen rounds,<sup>163</sup> and Connecticut did the same for magazines over ten.<sup>164</sup> Both statutes allowed current owners to retain possession.<sup>165</sup>

Finally, one state has followed Ohio's former approach of magazine licensing, rather than prohibition. In 1994, Massachusetts began requiring that possession and additional acquisitions of magazines over ten rounds be allowed only for citizens who have a "Class A" firearms license—which most Massachusetts gun owners have.<sup>166</sup>

#### IV. WHAT DOES THE HISTORY MEAN?

Given the history above, what does modern legal doctrine say about the permissibility of outlawing magazines, as in the so-called SAFE Act's ban on possession of magazines of more than ten rounds and loading more than seven rounds in a magazine, or New York City's ban on long gun magazines of more than five rounds? What about bans in other states of more than ten rounds (Maryland, Connecticut, the District of Columbia, California, and Hawaii for handguns only) or more than fifteen rounds (New Jersey and Colorado)?

This Part analyzes these questions in light of Second Amendment

<sup>161</sup> N.Y. State Rifle & Pistol Ass'n v. Cuomo, 990 F. Supp. 2d 349, 372–73 (W.D.N.Y. 2013).

<sup>162</sup> N.Y.C., N.Y., ADMIN. CODE § 10-306(b) (2015).

<sup>163</sup> Act of Mar. 20, 2013, ch. 48, sec. 1, §§ 18-12-301(2)(a)(I), -302(1), 2013 Colo. Sess. Laws 144, 144–45 (codified at COLO. REV. STAT. § 18-12-302(1) (2014)).

<sup>164</sup> Act of April 4, 2013, P.A. 13-3, § 23, 2013 Conn. Acts 47, 66 (Reg. Sess.) (codified at CONN. GEN. STAT. ANN. § 53-202w (West 2015)).

<sup>165</sup> COLO. REV. STAT. § 18-12-302(2) (permitting a person to maintain possession of a banned magazine if he/she owned it prior to the effective date of the law and maintained "continuous possession" thereafter); CONN. GEN. STAT. §§ 53-202w(e)(4), 53-202x(a)(1) (permitting a person to maintain possession of a banned magazine if he/she possessed it prior to the effective date of the law and declared it to the government).

<sup>166</sup> MASS. GEN. LAWS ANN. ch. 140 §§ 121, 131(a) (West 2014) (allowing possession and acquisition of magazines manufactured before Sept. 1994 by anyone with a Class A license); Matt Carroll, *Snapshot: Gun Licenses Per 1,000, 2012*, BOSTON.COM, (Jan. 24, 2013), [http://www.boston.com/yourtown/specials/snapshot/massachusetts\\_snapshot\\_gun\\_licenses\\_2012](http://www.boston.com/yourtown/specials/snapshot/massachusetts_snapshot_gun_licenses_2012) (showing the prevalence of Class A licenses in Massachusetts). A 2014 bill enacted in Massachusetts eliminated the lower category of "Class B" firearms licenses, so presumably all licensed firearms owners in Massachusetts will be able to acquire magazines of more than ten rounds, albeit only magazines manufactured before 1995. Act of Aug. 11, 2014, ch. 284, 2014 Mass. Acts, available at <https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter284>.

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precedents from the *Heller* Court and from subsequent cases that have relied at least in part on history and tradition in judging Second Amendment cases.

*A. The Crucial Years: 1789–1791 and 1866–1868*

For original meaning of the Second Amendment, the most important times are when the Second Amendment was created and when the Fourteenth Amendment was created, since a core purpose of the latter amendment was to make the individual's Second Amendment right enforceable against state and local government.<sup>167</sup> Congress sent the Second Amendment to the states for ratification in 1789, and ratification was completed in 1791.<sup>168</sup> The Fourteenth Amendment was passed by Congress in 1866, and ratification by the states was completed in 1868.<sup>169</sup>

1. Magazines in 1789–1791 and 1866–1868

As of 1789 to 1791, multi-shot magazines had existed for two centuries, and a variety of models had come and gone.<sup>170</sup> The state-of-the-art gun between 1789 and 1791 was the twenty- or twenty-two-shot Girandoni air rifle, powerful enough to take down an elk with a single shot.<sup>171</sup>

By the time that the Fourteenth Amendment was introduced in Congress, firearms with magazines of over ten or fifteen rounds had been around for decades.<sup>172</sup> The best of these was the sixteen-shot Henry Rifle, introduced in 1861 with a fifteen-round magazine.<sup>173</sup> The Henry Rifle was commercially successful, but Winchester Model 1866, with its seventeen-round magazine, was massively successful.<sup>174</sup> So by the time ratification of the Fourteenth Amendment was completed in 1868, it was solidly established that firearms with seventeen-round magazines were in common use.

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<sup>167</sup> See, e.g., *Ezell v. City of Chi.*, 651 F.3d 684, 702–03 (7th Cir. 2011).

<sup>168</sup> JOHNSON, KOPEL, MOCSARY & O'SHEA, *supra* note 90, at 218.

<sup>169</sup> *Id.* at 299.

<sup>170</sup> See *supra* Part II.B.

<sup>171</sup> See *supra* notes 27–31 and accompanying text.

<sup>172</sup> See *supra* notes 32–35 and accompanying text..

<sup>173</sup> RICHARD C. RATTENBURY, *A LEGACY IN ARMS: AMERICAN FIREARM MANUFACTURE, DESIGN, AND ARTISTRY, 1800–1900*, at 135 (2014); see *supra* note 49 and accompanying text.

<sup>174</sup> CLIFFORD R. CADWELL, *GUNS OF THE LINCOLN COUNTY WAR* 50 (2009); RATTENBURY, *supra* note 173, at 136; *supra* notes 55–55 and accompanying text.

## 2. Magazine Prohibitions in 1789–1791 and 1866–1868

From the colonial period to the dawn of American independence on July 4, 1776, and through the ratification of the Fourteenth Amendment, there were no prohibitions on magazines. Indeed, the first magazine prohibition did not appear until the alcohol prohibition era in 1927.<sup>175</sup> Thus, the historical evidence of the key periods for original meaning strongly suggests that magazine bans are unconstitutional.

*B. “Typically Possessed by Law-Abiding Citizens for Lawful Purposes” or “Dangerous and Unusual”?*

The Supreme Court’s *Heller* decision distinguished two broad types of arms. Some arms, such as handguns, are “typically possessed by law-abiding citizens for lawful purposes.”<sup>176</sup> These arms are also described by the Court as being “in common use.”<sup>177</sup> In contrast, some other arms are “dangerous and unusual.”<sup>178</sup> Examples provided by the Court were short-barreled shotguns or machine guns.<sup>179</sup> The common, typical, arms possessed by law-abiding citizens are protected by the Second Amendment; the “dangerous and unusual” arms are not protected.<sup>180</sup> By definition, “unusual” arms are not “in common use” or “typically possessed by law-abiding citizens for lawful purposes.”<sup>181</sup>

The *Heller* Court did not expressly mandate that historical analysis be used when deciding whether an arm is typical or common or “dangerous and unusual.” The *Heller* Court approvingly quoted the 1939 Supreme Court decision *United States v. Miller*,<sup>182</sup> which had described the original meaning of the Second Amendment as protecting individually-owned firearms that were “in common use at the time.”<sup>183</sup> The *Miller* Court’s 1939 decision did not extend Second Amendment protection to sawed-off

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<sup>175</sup> See *supra* notes 129–30 and accompanying text; see also Act of June 2, 1927, No. 372, § 3, 1927 Mich. Public Acts 887, 888–89 (repealed 1959) (regulating the possession of and carrying of certain firearms that were capable of firing sixteen shots without reloading).

<sup>176</sup> See *id.* at 625, 629 (majority opinion).

<sup>177</sup> *Id.* at 627 (quoting *United States v. Miller*, 307 U.S. 174, 179 (1939)).

<sup>178</sup> *Heller*, 554 U.S. at 627.

<sup>179</sup> See *id.* at 625, 627.

<sup>180</sup> See *id.* at 627.

<sup>181</sup> See *id.*

<sup>182</sup> *Id.* (quoting *Miller*, 307 U.S. at 179).

<sup>183</sup> *Heller*, 554 U.S. at 627 (quoting *Miller*, 307 U.S. at 179) (internal quotation marks omitted).

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shotguns;<sup>184</sup> as *Heller* explained *Miller*, the *Miller* principle was that sawed-off shotguns are dangerous and unusual.<sup>185</sup>

To be precise, *Miller* did not formally rule that short shotguns are *not* Second Amendment arms; the Court simply reversed and remanded the district court's decision granting criminal defendant Miller's motion to quash his indictment.<sup>186</sup> The Supreme Court said that the suitability of sawed-off shotguns as Second Amendment arms was not a fact that was subject to "judicial notice."<sup>187</sup> Presumably the federal district court in Arkansas could have taken up the remanded case and then received evidence regarding what sawed-off shotguns are used for and how common they are. But Miller and his co-defendant Frank Layton had disappeared long before the case was decided by the Supreme Court.<sup>188</sup>

Regardless, subsequent courts, including the court in *Heller*, read *Miller* as affirmatively stating that sawed-off shotguns are not protected by the Second Amendment.<sup>189</sup>

Even though *Heller*'s "common" or "typical" versus "dangerous and unusual" dichotomy seems primarily concerned with contemporary uses of a given type of arm, history can still be useful. As detailed in Part II, magazines of more than ten rounds have been very commonly possessed in the United States since 1862.<sup>190</sup> Common sense tells us that the small percentage of the population who are violent gun criminals is not remotely large enough to explain the massive market for magazines of more than ten rounds that has existed since the mid-nineteenth century. We have more than a century and a half of history showing such magazines to be owned by many millions of law-abiding Americans.<sup>191</sup>

Thus, a court which today ruled that such magazines are "dangerous and unusual" would seem to have some burden of explaining how such magazines, after a century and a half of being

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<sup>184</sup> *Miller*, 307 U.S. at 178.

<sup>185</sup> *Heller*, 554 U.S. at 625.

<sup>186</sup> *Miller*, 307 U.S. at 177, 183.

<sup>187</sup> *Id.* at 178. "Judicial notice" is when courts rely on facts that are not in the record of the case, but which are indisputably true. FED. R. EVID. 201. For example, they may be a subject of common knowledge (e.g., that in Arkansas, the sun is never visible in the sky at midnight) or can be ascertained from indisputable sources (e.g., that a particular section of the Code of Federal Regulations contains certain language). *See id.*

<sup>188</sup> Brian L. Frye, *The Peculiar Story of United States v. Miller*, 3 N.Y.U. J.L. & LIBERTY 48, 65–68 (2008). *The Peculiar Story of United States v. Miller* was cited by the Court in *Heller*. *Heller*, 554 U.S. at 623.

<sup>189</sup> *Heller*, 554 U.S. at 621–22.

<sup>190</sup> *See supra* Part II.

<sup>191</sup> *See supra* Part II.

“in common use” and “typically possessed by law-abiding citizens for lawful purposes,” became “dangerous and unusual” in the twenty-first century.

This is not possible. Today, magazines of more than ten rounds are more common than ever before.<sup>192</sup> They comprise about forty-seven percent of magazines currently possessed by Americans today.<sup>193</sup> The AR-15 rifle (introduced in 1963) is the most popular rifle in American history, with sales of several million;<sup>194</sup> its standard magazines are twenty or thirty rounds.<sup>195</sup>

*C. “Longstanding” Controls Versus “Few Laws in the History of Our Nation”*

Just as *Heller* distinguishes types of arms (common or typical versus dangerous and unusual), *Heller* distinguishes types of arms-control laws. One type of arms controls are “longstanding,” and these are “presumptively lawful.”<sup>196</sup> Examples listed by *Heller* are bans on gun possession “by felons and the mentally ill,” bans on carrying guns “in sensitive places such as schools and government buildings,” and “conditions and qualifications on the commercial sale of arms.”<sup>197</sup>

The *Heller* Court highlighted the unusual nature of the District of Columbia anti-gun laws:

Few laws in the history of our Nation have come close to the severe restriction of the District’s handgun ban. And some of those few have been struck down. In *Nunn v. State*, the Georgia Supreme Court struck down a prohibition on carrying pistols openly (even though it upheld a prohibition on carrying concealed weapons). In *Andrews v. State*, the Tennessee Supreme Court likewise held that a statute that forbade openly carrying a pistol “publicly or privately, without regard to time or place, or circumstances,” violated

<sup>192</sup> See *Fyock v. City of Sunnyvale*, No. C-13-5807-RMW, 2014 U.S. Dist. LEXIS 29722, at \*13 (N.D. Cal. Mar. 5, 2014) (agreeing with and incorporating affidavit from plaintiffs’ expert that “whatever the actual number of such magazines in United States consumers’ hands is, it is in the tens-of-millions, even under the most conservative estimates.”).

<sup>193</sup> *Id.* (“Plaintiffs cite statistics showing that magazines having a capacity to accept more than ten rounds make up approximately 47 percent of all magazines owned.”).

<sup>194</sup> PATRICK SWEENEY, *THE GUN DIGEST BOOK OF THE AR-15*, at 14 (2005); see Meghan Lisson, *Run on Guns: AR-15s Sales Soar*, CNBC (Apr. 25, 2013), <http://www.cnbc.com/id/100673826>.

<sup>195</sup> SWEENEY, *supra* note 194, at 99.

<sup>196</sup> *District of Columbia v. Heller*, 554 U.S. 570, 626, 627 n.26 (2008).

<sup>197</sup> *Id.* at 626–27.

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the state constitutional provision (which the court equated with the Second Amendment). That was so even though the statute did not restrict the carrying of long guns.<sup>198</sup>

What was the history that led the Court to declare the handgun prohibition to be “unusual”—that is, to be the opposite of a traditional gun control that was presumptively constitutional? The District of Columbia handgun ban was enacted in 1975 and took effect in 1976.<sup>199</sup> Chicago enacted a similar ban in 1982, and a half-dozen Chicago suburbs followed suit during the 1980s.<sup>200</sup> In 1837, the Georgia legislature had enacted a handgun ban, but that was ruled unconstitutional on Second Amendment grounds by the unanimous Georgia Supreme Court in 1846.<sup>201</sup> In 1982 and 2005, San Francisco enacted handgun bans, but they were both ruled unlawful because of their plain violation of the California state preemption statute, which forbids localities to outlaw firearms which are permitted under state law.<sup>202</sup>

These are the facts under which the Supreme Court declared handgun bans to be suspiciously rare in America’s history—at the other end of the spectrum from the presumptively constitutional “longstanding” controls.

The 1975 District of Columbia handgun ban was thirty-three years old when the Supreme Court decided *Heller* in 2008. This suggests that thirty-three years is not sufficient for a gun control to be considered “longstanding.”

As detailed in Part III, the first of today’s magazine bans was enacted by New Jersey in 1990, at fifteen rounds.<sup>203</sup> The first state-level ten-round ban did not take effect until California passed such

<sup>198</sup> *Id.* at 629 (citations omitted) (citing *Nunn v. State*, 1 Ga. 243, 251 (1846); *Andrews v. State*, 50 Tenn. 165, 187 (1871)); *see also Heller*, 554 U.S. at 629 (“A statute which, under the pretence of regulating, amounts to a destruction of the right, or which requires arms to be so borne as to render them wholly useless for the purpose of defence, would be clearly unconstitutional . . .” (quoting *State v. Reid*, 1 Ala. 612, 616–17 (1840)) (internal quotation marks omitted)).

<sup>199</sup> Edward D. Jones, III, *The District of Columbia’s “Firearms Control Regulations Act of 1975”: The Toughest Handgun Control Law in the United States—Or Is It?*, 455 ANNALS AM. ACAD. POL. & SOC. SCI. 138, 139 (1981).

<sup>200</sup> *See McDonald v. City of Chi.*, 561 U.S. 742, 749 (2010); Steve Chapman, *Chicago’s Pointless Handgun Ban: City Gun Ordinances Proved to Be a Failure*, CHI. TRIB., Mar. 4, 2010, at C21.

<sup>201</sup> *Nunn*, 1 Ga. at 246, 251. The *Heller* Court cited this case with approval. *Heller*, 554 U.S. at 612.

<sup>202</sup> *Fiscal v. City & Cnty. of S.F.*, 70 Cal. Rptr. 3d 324, 326, 341–42 (Ct. App. 2008); *Doe v. City & Cnty. of S.F.*, 186 Cal Rptr. 380, 381 (Ct. App. 1982).

<sup>203</sup> *See supra* note 151–52 and accompanying text.



a law in 2000.<sup>204</sup> These statutes, and other post-1990 magazine bans, would not qualify as “longstanding.”

Previously, three states and the District of Columbia had enacted some magazine restrictions during the alcohol prohibition era.<sup>205</sup> The District of Columbia ban, with modifications, is still in effect.<sup>206</sup> The Michigan and Rhode Island bans were repealed long ago.<sup>207</sup> The Ohio special licensing statute allowed the free purchase of any magazine, but required a permit to insert a magazine of thirty-two rounds or more into a firearm; the permit requirement was repealed in 2014.<sup>208</sup> It is indisputable in the modern United States that magazines of up to thirty rounds for rifles and up to twenty rounds for handguns are standard equipment for many popular firearms.

Several post-*Heller* lower courts have conducted in-depth examinations of the history of particular gun control laws. The next Part examines each of those cases and then applies their methodology to the historical facts of bans on magazines of more than five, seven, ten, and fifteen rounds.

#### *D. Lower-Court Decisions Applying History*

##### *1. Ezell v. City of Chicago*

After *McDonald v. City of Chicago* made it clear that the Second Amendment applies to municipal governments, the Chicago City Council relegalized handgun possession and outlawed all target ranges within city limits.<sup>209</sup> Assessing the constitutionality of the ban, the Seventh Circuit used a two-step test, similar to analysis that is sometimes used in First Amendment cases: (1) Is the activity or item within the scope of the Second Amendment, as historically understood? If the answer is “no,” then the restrictive law does not violate the Second Amendment.<sup>210</sup> (2) If the answer to the first question is “yes,” then the court will apply some form of the heightened scrutiny. The intensity of the scrutiny will depend on how close the restriction comes to affecting the core right of armed self-defense.<sup>211</sup>

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<sup>204</sup> See *supra* note 156 and accompanying text.

<sup>205</sup> See *supra* notes 129–30, 134, 140 and accompanying text.

<sup>206</sup> See *supra* notes 140–45 and accompanying text.

<sup>207</sup> See *supra* notes 131, 133 and accompanying text.

<sup>208</sup> See *supra* notes 135–39 and accompanying text.

<sup>209</sup> *Ezell v. City of Chi.*, 651 F.3d 684, 690–91 (7th Cir. 2011).

<sup>210</sup> *Id.* at 702–03.

<sup>211</sup> *Id.* at 703.

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So the *Ezell* court began the step-one analysis by considering whether target practice was historically considered part of the Second Amendment right.<sup>212</sup> Chicago had argued to the contrary, listing some eighteenth- and nineteenth-century state statutes and municipal ordinances restricting firearms discharge within city limits.<sup>213</sup> The Seventh Circuit found almost all of the listed ordinances to be irrelevant.<sup>214</sup> Many of them did not ban firearms discharge but simply required a permit.<sup>215</sup> Others were plainly concerned with fire prevention, an issue that would not be a problem at a properly-designed modern range.<sup>216</sup> Thus:

Only two—a Baltimore statute from 1826 and an Ohio statute from 1831—flatly prohibited the discharge of firearms based on concerns unrelated to fire suppression, in contrast to the other regulatory laws we have mentioned. This falls far short of establishing that target practice is wholly outside the Second Amendment as it was understood when incorporated as a limitation on the States.<sup>217</sup>

So according to the Seventh Circuit, the historical example of repressive laws in one state and one city are insufficient to support the inference that the repressed activity is outside the scope of the Second Amendment.<sup>218</sup> The historical basis of restrictions that would affect magazines over fifteen rounds is nearly as thin: two states with statutes enacted in 1927, and later repealed, plus the District of Columbia's 1932 law.<sup>219</sup> As for imposing a ban for guns with magazines of more than ten rounds (or seven or five), there is *no* historical basis.

Thus, under the *Ezell* analysis, bans on magazines infringe the Second Amendment right as it was historically understood, and such bans must be analyzed under heightened scrutiny.

## 2. *United States v. Rene E.*

In 2009, the First Circuit heard a Second Amendment challenge

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<sup>212</sup> *Id.* at 704.

<sup>213</sup> *Id.* at 705–06.

<sup>214</sup> *Id.*

<sup>215</sup> *Id.* at 705.

<sup>216</sup> *Id.* at 706.

<sup>217</sup> *Id.* (quoting *District of Columbia v. Heller*, 554 U.S. 570, 632 (2008)); *see also Heller*, 554 U.S. at 632 (“[W]e would not stake our interpretation of the Second Amendment upon a single law . . . that contradicts the overwhelming weight of other evidence . . .”).

<sup>218</sup> *See Ezell*, 652 F.3d at 706.

<sup>219</sup> *See supra* notes 131, 133, 140 and accompanying text.



to a federal statute that restricted, but did not ban, handgun possession by juveniles.<sup>220</sup> The federal statute was enacted in 1994,<sup>221</sup> and so of course was not “longstanding.”<sup>222</sup> The First Circuit looked at the history of state laws restricting juvenile handgun possession, to see if they were longstanding.<sup>223</sup>

The First Circuit found state or local restrictions on handgun transfers to juveniles and judicial decisions upholding such restrictions from Georgia (1911 case), Tennessee (1878 case),<sup>224</sup> Pennsylvania (1881 case),<sup>225</sup> Indiana (1884 case),<sup>226</sup> Kentucky (1888 case),<sup>227</sup> Alabama (1858 case),<sup>228</sup> Illinois (1917 case upholding a Chicago ordinance),<sup>229</sup> Kansas (1883 case allowing tort liability for transfer), and Minnesota (1918 case allowing tort liability for transfer).<sup>230</sup>

Thus, the First Circuit was able to point to six state statutes, all of them enacted well over a century previously.<sup>231</sup> They were buttressed by one municipal ordinance and two cases allowing tort liability, both of these being nearly a century old.<sup>232</sup>

The history of magazine restrictions is considerably weaker than that of the juvenile handgun statutes analyzed in *Rene E.* There were six statutes on juveniles, all of which were enacted before 1890, and one of which predated the Civil War.<sup>233</sup> This is much more than the pair of state statutes on magazines dating from the late 1920s.

The *Rene E.* case does not attempt to quantify how many state statutes are necessary for a gun control to be longstanding; however, we can say that magazine restrictions fall well short of the historical foundation that the First Circuit relied on to uphold juvenile handgun restrictions.

While *Rene E.* and *Ezell* both used history, the particular way that they used it was different. For *Rene E.*, history was mixed in

<sup>220</sup> 18 U.S.C. § 922(x)(2)–(3) (2013); *United States v. Rene E.*, 583 F.3d 8, 16 (1st Cir. 2009).

<sup>221</sup> *Rene E.*, 583 F.3d at 12.

<sup>222</sup> *Id.*

<sup>223</sup> *Id.* at 14–15.

<sup>224</sup> *State v. Callicutt*, 69 Tenn. 714, 716–17 (1878).

<sup>225</sup> *McMillan v. Steele*, 119 A. 721, 722 (Pa. 1923).

<sup>226</sup> *State v. Allen*, 94 Ind. 441, 441 (1884).

<sup>227</sup> *Tankersly v. Commonwealth*, 9 S.W. 702, 703 (Ky. 1888).

<sup>228</sup> *Coleman v. State*, 32 Ala. 581, 582–83 (1858).

<sup>229</sup> *Biffer v. Chicago*, 116 N.E. 182, 184 (Ill. 1917).

<sup>230</sup> *Schmidt v. Capital Candy Co.*, 166 N.W. 502, 503–04 (Minn. 1918).

<sup>231</sup> *United States v. Rene E.*, 583 F.3d 8, 14–15 (1st Cir. 2009).

<sup>232</sup> *Id.*

<sup>233</sup> *Id.*

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with substantive analysis of the modern federal statute, which the First Circuit praised for its “narrow scope” and “important exceptions.”<sup>234</sup>

For *Ezell*, history was just the first step. *Ezell* used history to determine that the range ban was not presumptively lawful; once that question was answered, *Ezell* proceeded to analyze the ban under heightened scrutiny.<sup>235</sup>

### 3. *Heller II*

#### a. *Majority Opinion*

In the 2008 case *District of Columbia v. Heller*, the Supreme Court ruled that two District of Columbia ordinances violated the Second Amendment: the handgun ban and the ban on the requirement that any firearm in the home be kept locked or disassembled and thus unusable for self-defense.<sup>236</sup> Further, the District of Columbia required a permit to carry a gun anywhere (even from room to room in one’s home)<sup>237</sup> and permits were never granted; the Court ordered that plaintiff Dick Heller be granted a permit.<sup>238</sup>

The Council of the District of Columbia responded by repealing all three of the unconstitutional ordinances and enacting the most severe gun control system in the United States.<sup>239</sup> Dick Heller and several other plaintiffs challenged the new ordinances in the case known as *Heller II*.<sup>240</sup>

Using the two-step test, the District of Columbia Circuit majority first examined whether any of the challenged provisions were “longstanding.”<sup>241</sup> If so, then the provision would be held as not violating the Second Amendment right, with no further analysis needed.<sup>242</sup>

Regarding handgun registration, the majority identified statutes from New York (1911), Illinois (1881), Georgia (1910), Oregon

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<sup>234</sup> *Id.* at 11–16 (“[T]his law, with its narrow scope and its exceptions, does not offend the Second Amendment.”). Exceptions include farm and ranch work as well as target shooting or other activities under parental supervision. 18 U.S.C. § 922(x)(3)(A)(i)–(ii) (2013).

<sup>235</sup> *Ezell v. City of Chi.*, 651 F.3d 684, 706 (7th Cir. 2011).

<sup>236</sup> *District of Columbia v. Heller*, 554 U.S. 570, 635 (2008).

<sup>237</sup> *Id.* at 574–75.

<sup>238</sup> *Id.* at 635.

<sup>239</sup> *See Heller v. District of Columbia (Heller II)*, 670 F.3d 1244, 1248–49 (D.C. Cir. 2011).

<sup>240</sup> *Id.* at 1247.

<sup>241</sup> *Id.* at 1252–53.

<sup>242</sup> *See id.* at 1252.

(1917), and Michigan (1927).<sup>243</sup> In addition, some jurisdictions required handgun buyers to provide information about themselves to retailers, but did not require that the retailer deliver the information to the government: California (1917), Territory of Hawaii (1927), and the District of Columbia (1932).<sup>244</sup> So “[i]n sum, the basic requirement to register a handgun is longstanding in American law, accepted for a century in diverse states and cities and now applicable to more than one fourth of the nation by population.”<sup>245</sup>

The requirement that the government be provided with some basic information about persons acquiring handguns, in a manner that was “self-evidently *de minimis*” was therefore constitutional.<sup>246</sup> Seven states, with laws originating between 1881 and 1927, were apparently sufficiently numerous and “diverse” to qualify as “longstanding.”

However, although *de minimis* registration of handguns was longstanding, many of the new District of Columbia requirements went beyond traditional *de minimis* systems.<sup>247</sup> Further, “[t]hese early registration requirements, however, applied with only a few exceptions solely to handguns—that is, pistols and revolvers—and not to long guns. Consequently, we hold the basic registration requirements are constitutional only as applied to handguns. With respect to long guns they are novel, not historic.”<sup>248</sup> So the case was remanded to the district court for further fact-finding, since the District of Columbia government had provided the court with almost no information about whether the novel requirements passed heightened scrutiny by being narrowly tailored.<sup>249</sup>

The case had come to the District of Columbia Circuit following cross motions for summary judgment.<sup>250</sup> While the circuit court decided that the novel registration requirements needed a more complete factual record, the panel also decided that the record contained enough information for a ruling on the merits of the District’s ban on various semiautomatic rifles, which the district council labeled “assault weapons,” and on the District’s ban on

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<sup>243</sup> *Id.* at 1253–54.

<sup>244</sup> *See id.* at 1254.

<sup>245</sup> *Id.* The court listed seven states that today have handgun registration laws. *Id.* at n.\*.

<sup>246</sup> *Id.* at 1254–55.

<sup>247</sup> *Id.* at 1255.

<sup>248</sup> *Id.*

<sup>249</sup> *See id.* at 1247.

<sup>250</sup> *See id.*

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magazines holding more than ten rounds.<sup>251</sup>

The District of Columbia Circuit majority stated “[w]e are not aware of evidence that prohibitions on either semi-automatic rifles or large-capacity magazines are longstanding and thereby deserving of a presumption of validity.”<sup>252</sup> In a footnote, the majority cited the 1927 Michigan magazine statute and the 1932 District of Columbia ordinance detailed in Part III of this article.<sup>253</sup> There is no reason to think that the majority’s determination on this point would change if the 1927 Rhode Island statute had also been cited.

Importantly, the majority did not suggest that the magazine bans enacted in 1990 or thereafter had any relevance to whether magazine bans are “longstanding.”

Accordingly, the majority proceeded to analyze the rifle and magazine bans. The majority provided two paragraphs of explanation of why the rifle ban passed intermediate scrutiny and one paragraph on why the magazine ban did so.<sup>254</sup>

Discussion of whether intermediate scrutiny was the correct standard, or whether magazine bans pass intermediate scrutiny, is beyond the scope of this article. However, it does seem to appear that the District of Columbia Circuit would have acted more prudently by remanding the case for fact-finding in the district court. To support the ban, the panel majority could only point to legislative testimony by a gun-prohibition lobbyist and by the District of Columbia police chief, plus a Department of Justice report on the 1994 to 2004 federal ban on such magazines.<sup>255</sup> Notably, the panel majority did not address the report’s finding that a ten-year nationwide ban had led to no discernible reduction in homicides, injuries, or the number of shots fired in crimes.<sup>256</sup>

*b. Dissent*

A forceful dissent by Judge Brett Kavanaugh critiqued the majority’s application of intermediate scrutiny.<sup>257</sup> He argued that

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<sup>251</sup> *Id.* at 1246, 1260, 1264.

<sup>252</sup> *Id.* at 1260.

<sup>253</sup> *Id.* at 1260 n.\*.

<sup>254</sup> *Id.* at 1262–64.

<sup>255</sup> *Id.* at 1263–64.

<sup>256</sup> KOPER EL AL., *supra* note 148, at 92.

<sup>257</sup> *Heller II*, 670 F.3d at 1285 (Kavanaugh, J., dissenting) (“A ban on a class of arms is not an ‘incidental’ regulation. It is equivalent to a ban on a category of speech. Such restrictions on core enumerated constitutional protections are *not* subjected to mere intermediate scrutiny review. The majority opinion here is in uncharted territory in suggesting that intermediate scrutiny can apply to an outright ban on possession of a class of weapons that have not

the majority's approach was necessarily incorrect, because its logic on banning semiautomatic rifles would allow a ban on all semiautomatic handguns—which constitute the vast majority of handguns produced today.<sup>258</sup>

More fundamentally, he argued that *Heller* does not tell courts to use tiered scrutiny to assess gun control laws.<sup>259</sup> Rather, *Heller* looks to history and tradition.<sup>260</sup> So gun controls that are well-grounded in history and tradition are constitutional; gun control laws which are not so grounded are unconstitutional.<sup>261</sup>

Using the standard of history and tradition, Judge Kavanaugh argued that the entire District of Columbia registration scheme was unconstitutional.<sup>262</sup> Regarding de minimis handgun registration, the statutes cited by the majority were mostly record-keeping requirements for gun dealers, not centralized information collection by the government.<sup>263</sup> The novel and much more onerous requirements of the District of Columbia registration system for all guns had no basis in history and tradition.<sup>264</sup> For all firearms, any registration system beyond dealer record-keeping requirements was unconstitutional.<sup>265</sup>

Judge Kavanaugh examined the history of semiautomatic rifles and found them to be in common use for over a century and thus protected by the Second Amendment from prohibition.<sup>266</sup> He did not have similar information on magazines and thus urged that the magazine issue be remanded for fact-finding.<sup>267</sup> In light of the evidence on magazines that has been presented subsequent to the 2011 *Heller II* decision, Judge Kavanaugh's methodology

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traditionally been banned.”).

<sup>258</sup> *Id.* at 1285–86.

<sup>259</sup> *See id.* at 1282.

<sup>260</sup> *Id.* (“*Heller* was resolved in favor of categoricalism—with the categories defined by text, history, and tradition—and against balancing tests such as strict or intermediate scrutiny or reasonableness.”).

<sup>261</sup> *See id.*

<sup>262</sup> *Id.* at 1286.

<sup>263</sup> *See id.* at 1292–93.

<sup>264</sup> *Id.* at 1294.

<sup>265</sup> *See id.*

<sup>266</sup> *See id.* at 1287 (citing JOHNSON, KOPEL, MOCSARY & O'SHEA, *supra* note 90, at 11).

<sup>267</sup> *Heller II*, 670 F.3d at 1296 n.20 (Kavanaugh, J., dissenting) (“The D.C. ban on magazines of more than 10 rounds requires analysis in the first instance by the District Court. In order to apply *Heller*'s test to this prohibition, we must know whether magazines with more than 10 rounds have traditionally been banned and are not in common use. The parties here did not brief that question in much detail. Evidence presented to the District Court on the history and prevalence of magazines of more than 10 rounds would be helpful to the proper disposition of that issue under the *Heller* test. Therefore, I would remand to the District Court for analysis of that issue.”).

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straightforwardly leads to the conclusion that the District of Columbia magazine ban is unconstitutional.<sup>268</sup> The *Heller II* majority rightly recognized that magazine bans are not “longstanding,”<sup>269</sup> and this article has demonstrated that magazines of more than ten rounds have been a common part of the American tradition of firearms ownership since before the ratification of the Fourteenth Amendment in 1868.

#### 4. *Silvester v. Harris*

Another decision carefully employing historical analysis is *Silvester v. Harris*,<sup>270</sup> from the United States District Court for the Eastern District of California.

A California statute requires that firearms purchasers wait ten days before they can take their gun home from the store.<sup>271</sup> In California, background checks on firearms buyers are sometimes completed within minutes and sometimes can take a week or longer.<sup>272</sup> Senior District Judge Anthony Ishii (appointed to the federal court in 1997 by President Clinton)<sup>273</sup> ruled the waiting period unconstitutional, to the extent that the waiting period lasted longer than the time required to complete the background check on a given buyer.<sup>274</sup>

Like the Seventh Circuit in *Ezell*, Judge Ishii looked to 1791 and 1868 as the crucial periods.<sup>275</sup>

California Attorney General Kamala Harris had directed the court to a book arguing that between 1790 and 1840 many Americans might have to travel for several days in order to buy a gun, so there was a de facto waiting period between the time a person decided to buy a gun and when a person could take possession of the gun.<sup>276</sup> Judge Ishii held this irrelevant; the court’s job was to consider the legality of government regulations that

<sup>268</sup> See Lindsay Colvin, Note, *History, Heller, and High-Capacity Magazines: What Is the Proper Standard of Review for Second Amendment Challenges?*, 41 FORDHAM URB. L.J. 1041, 1075–80 (2014).

<sup>269</sup> *Heller II*, 670 F.3d at 1260.

<sup>270</sup> *Silvester v. Harris*, No. 1:11–CV–2137 AWI SAB, 2014 U.S. Dist. LEXIS 118284 (E.D. Cal. Aug. 25, 2014).

<sup>271</sup> CAL. PENAL CODE §§ 26815(a), 27540(a) (West 2014).

<sup>272</sup> *Silvester*, 2014 U.S. Dist. LEXIS 118284, at \*82.

<sup>273</sup> Chief District Court Judge Anthony W. Ishii, U.S. DIST. COURT: E. DIST. OF CAL., [http://www.caed.uscourts.gov/caed/staticOther/page\\_630.htm](http://www.caed.uscourts.gov/caed/staticOther/page_630.htm) (last visited Feb. 21, 2015).

<sup>274</sup> *Silvester*, 2014 U.S. Dist. LEXIS 118284, at \*101–02.

<sup>275</sup> Compare *id.* at \*30, with *Ezell v. City of Chi.*, 651 F.3d 684, 702–03 (7th Cir. 2011).

<sup>276</sup> *Silvester*, 2014 U.S. Dist. LEXIS 118284, at \*8–9.

might impede the exercise of a constitutional right and the book provided no evidence that government-imposed waiting periods for firearm purchases existed between 1790 and 1840.<sup>277</sup>

Another book explained that the first waiting period law was proposed in 1923—a one-day waiting period for handguns.<sup>278</sup> The law was adopted in California and eventually by eight other states.<sup>279</sup> This too was irrelevant, ruled the court, because it had nothing to do with 1791 or 1868.<sup>280</sup>

The court explained that “[i]t is Defendant’s burden to show that the 10–day waiting period either falls outside the scope of Second Amendment protections as historically understood or fits within one of several categories of longstanding regulations that are presumptively lawful.”<sup>281</sup>

The complete absence of evidence of waiting periods in 1791 and 1868 eliminated the first possibility.<sup>282</sup> What about the question of whether waiting periods were “longstanding regulations that are presumptively lawful”? The answer to this question is not confined to 1791 and 1868.

The court explained that “the concept of a ‘longstanding and presumptively lawful regulation’ is that the regulation has long been accepted and is rooted in history.”<sup>283</sup> California’s 1923 statute did not come close. Besides that, the California wait was only one day and only for retail handguns.<sup>284</sup> Not until 1975 was the number of days extended to double digits and not until 1991 to long guns.<sup>285</sup> Consistent with the unusual nature of waiting periods, only ten states and the District of Columbia today have a waiting period for at least some firearms.<sup>286</sup>

Thus, the court concluded that the plaintiffs’ challenge had passed step one of the two-step test,<sup>287</sup> and the court proceeded to apply heightened scrutiny.<sup>288</sup> The court stated that it did not have to decide whether to use strict or intermediate scrutiny.<sup>289</sup> The

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<sup>277</sup> *See id.* at \*9–10, \*78.

<sup>278</sup> *Id.* at \*11.

<sup>279</sup> *Id.*

<sup>280</sup> *Id.* at \*11–12.

<sup>281</sup> *Id.* at \*75.

<sup>282</sup> *Id.* at \*75–76.

<sup>283</sup> *Id.* at \*78 (citations omitted).

<sup>284</sup> *Id.* at \*79.

<sup>285</sup> *Id.*

<sup>286</sup> *Id.* at \*30.

<sup>287</sup> *Id.* at \*75–76.

<sup>288</sup> *Id.* at \*80.

<sup>289</sup> *Id.*



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waiting period statute failed intermediate scrutiny, as applied to persons who already possessed a firearm (based on state registration data), and who passed the background check when purchasing an additional firearm.<sup>290</sup> Therefore, *a fortiori*, the statute would fail strict scrutiny. The court gave the state legislature 180 days to revise the statute so as to eliminate the post-background-check waiting period for persons who already have a gun.<sup>291</sup> The plaintiffs had not challenged the waiting period as applied to first-time gun buyers, nor as to persons who had not yet passed the background check.<sup>292</sup>

## V. CONCLUSION

Rifle magazines holding more than ten or fifteen rounds have been common in the United States since the mid-nineteenth century.<sup>293</sup> Handgun magazines over ten rounds have been common since 1935, and handgun magazines over fifteen have been common since the mid-1960s.<sup>294</sup>

Magazine prohibition has historically been rare. There is *no* historical basis for a magazine limit of ten rounds or lower. As for prohibitions with higher limits, there are only two examples, both of them from 1927, the outer edge of what courts have considered to be examples of state statutes that may be considered “longstanding”: Michigan (enacted 1927, repealed 1959), Rhode Island (enacted 1927, loosened 1959, repealed 1975).<sup>295</sup> Ohio formerly required a special permit to actually insert a magazine above a certain size into a firearm but never banned sales.<sup>296</sup> (The original limit was eighteen rounds or more and later was thirty-two rounds or more.)<sup>297</sup> As is often the case, the District of Columbia is the *sui generis* outlier, with its 1932 restriction still in effect today, with some modifications.<sup>298</sup>

Of all the courts that have examined history when ruling on gun control issues, no court has ever held that laws of two or three states plus one city are sufficient to establish a gun law as being

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<sup>290</sup> *Id.* at \*90–91, 96–97.

<sup>291</sup> *Id.* at \*101–03.

<sup>292</sup> *See id.* at \*23–25.

<sup>293</sup> *See supra* notes 43–64 and accompanying text.

<sup>294</sup> *See supra* notes 102–06 and accompanying text.

<sup>295</sup> *See supra* notes 130, 132–33 and accompanying text.

<sup>296</sup> *See supra* notes 136–39 and accompanying text.

<sup>297</sup> *See supra* notes 134–35 and accompanying text.

<sup>298</sup> *See supra* notes 140–45 and accompanying text.



“longstanding” or part of American history and tradition. To the contrary, ammunition capacity limits are far outside the norm of the traditional exercise and regulation of Second Amendment rights. Not until California in 1999 did any state set a magazine limit as low as ten.<sup>299</sup>

What does this mean for modern legal analysis? Under judicial methods which hew closely to history and tradition, the historical absence (of limits of ten or less) or the extreme rarity (limits of fifteen or less) would be sufficient for any such modern limit to be ruled unconstitutional. Owning such magazines is very long-established manner in which the right to arms has historically been exercised in America.

Other courts perform a two-step test. Challengers to magazine limit laws should always pass step one, since magazine limits are not “longstanding.”

As for step two—review under some form of heightened scrutiny—the Supreme Court taught in *Heller* that when the “severe restriction” of a “ban” has support from “[f]ew laws in the history of our Nation,” the law’s constitutionality is very doubtful. This was true for the prohibition of handguns, and it is also true for the prohibition of magazines holding more than five, seven, ten, or fifteen rounds.

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<sup>299</sup> See *supra* note 156 and accompanying text.

# EXHIBIT 101

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U.S. DEPARTMENT OF JUSTICE • FEDERAL BUREAU OF INVESTIGATION • CRIMINAL JUSTICE INFORMATION SERVICES DIVISION

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Table 1

**Crime in the United States**  
by Volume and Rate per 100,000 Inhabitants, 2000–2019

[Overview](#)   [Data Declaration](#)   [Download Excel \(Table 1\)](#)   [Download Excel \(Table 1A\)](#)

Table 1

Year	Population <sup>1</sup>	Violent crime <sup>2</sup>	Violent crime rate	Murder and nonnegligent manslaughter	Murder and nonnegligent manslaughter rate	Rape (revised definition) <sup>3</sup>	Rape (revised definition) rate <sup>3</sup>	Rape (legacy definition) <sup>4</sup>	Rape (legacy definition) rate <sup>4</sup>	Robbery	Robbery rate	Aggravated assault
2000	281,421,906	1,425,486	506.5	15,586	5.5			90,178	32.0	408,016	145.0	911,746
2001 <sup>5</sup>	285,317,559	1,439,480	504.5	16,037	5.6			90,863	31.8	423,557	148.5	909,643
2002	287,973,924	1,423,677	494.4	16,229	5.6			95,235	33.1	420,806	146.1	891,446
2003	290,788,976	1,383,676	475.8	16,528	5.7			93,883	32.3	414,235	142.5	859,643
2004	293,656,842	1,360,088	463.2	16,148	5.5			95,089	32.4	401,470	136.7	847,346
2005	296,507,061	1,390,745	469.0	16,740	5.6			94,347	31.8	417,438	140.8	862,346
2006	299,398,484	1,435,123	479.3	17,309	5.8			94,472	31.6	449,246	150.0	874,346
2007	301,621,157	1,422,970	471.8	17,128	5.7			92,160	30.6	447,324	148.3	866,358
2008	304,059,724	1,394,461	458.6	16,465	5.4			90,750	29.8	443,563	145.9	843,683
2009	307,006,550	1,325,896	431.9	15,399	5.0			89,241	29.1	408,742	133.1	812,514
2010	309,330,219	1,251,248	404.5	14,722	4.8			85,593	27.7	369,089	119.3	781,844
2011	311,587,816	1,206,005	387.1	14,661	4.7			84,175	27.0	354,746	113.9	752,423
2012	313,873,685	1,217,057	387.8	14,856	4.7			85,141	27.1	355,051	113.1	762,009
2013	316,497,531	1,168,298	369.1	14,319	4.5	113,695	35.9	82,109	25.9	345,093	109.0	726,777
2014	318,907,401	1,153,022	361.6	14,164	4.4	118,027	37.0	84,864	26.6	322,905	101.3	731,089
2015	320,896,618	1,199,310	373.7	15,883	4.9	126,134	39.3	91,261	28.4	328,109	102.2	764,057
2016	323,405,935	1,250,162	386.6	17,413	5.4	132,414	40.9	96,970	30.0	332,797	102.9	802,982
2017	325,147,121	1,247,917	383.8	17,294	5.3	135,666	41.7	99,708	30.7	320,596	98.6	810,319
2018 <sup>6</sup>	326,687,501	1,209,997	370.4	16,374	5.0	143,765	44.0	101,363	31.0	281,278	86.1	810,982
2019	328,239,523	1,203,808	366.7	16,425	5.0	139,815	42.6	98,213	29.9	267,988	81.6	821,182

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- <sup>1</sup> Populations are U.S. Census Bureau provisional estimates as of July 1 for each year except 2000 and 2010, which are decennial census counts.
  - <sup>2</sup> The violent crime figures include the offenses of murder, rape (legacy definition), robbery, and aggravated assault.
  - <sup>3</sup> The figures shown in this column for the offense of rape were estimated using the revised UCR definition of rape. See data declaration for further explanation.
  - <sup>4</sup> The figures shown in this column for the offense of rape were estimated using the legacy UCR definition of rape. See data declaration for further explanation.
  - <sup>5</sup> The murder and nonnegligent homicides that occurred as a result of the events of September 11, 2001, are not included in this table.
  - <sup>6</sup> The crime figures have been adjusted.
  - NOTE: Although arson data are included in the trend and clearance tables, sufficient data are not available to estimate totals for this offense. Therefore, no arson data are published in this table.

Table 1A

Years	Violent crime <sup>1</sup>	Violent crime rate	Murder and nonnegligent manslaughter	Murder and nonnegligent manslaughter rate	Rape (revised definition) <sup>2</sup>	Rape (revised definition) rate <sup>2</sup>	Rape (legacy definition) <sup>3</sup>	Rape (legacy definition) rate <sup>3</sup>	Robbery	Robbery rate	Aggravated assault	Aggravated assault rate
2019/2018	-0.5	-1.0	+0.3	-0.2	-2.7	-3.2	-3.1	-3.6	-4.7	-5.2	+1.3	+0.3
2019/2015	+0.4	-1.9	+3.4	+1.1	+10.8	+8.4	+7.6	+5.2	-18.3	-20.2	+7.5	+5.0
2019/2010	-3.8	-9.3	+11.6	+5.1			+14.7	+8.1	-27.4	-31.6	+5.0	-1.0

- 
- <sup>1</sup> The violent crime figures include the offenses of murder, rape (legacy definition), robbery, and aggravated assault.
  - <sup>2</sup> The figures shown in this column for the offense of rape were estimated using the revised UCR definition of rape. See data declaration for further explanation.
  - <sup>3</sup> The figures shown in this column for the offense of rape were estimated using the legacy UCR definition of rape. See data declaration for further explanation.

Data Declaration

Provides the methodology used in constructing this table and other pertinent information about this table.

Overview

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Table 1—Crime in the United States, by Volume and Rate per 100,000 Inhabitants, 2000–2019

Table 1A—Crime in the United States, Percent Change in Volume and Rate per 100,000 Inhabitants for 2 years, 5 years, and 10 years

- In 2019, the estimated number of violent crime offenses was 1,203,808, a decrease of 0.5 percent from the 2018 estimate.
- The violent crime of murder and nonnegligent manslaughter increased 0.3 percent in 2019 when compared with the 2018 estimate. Rape offenses (legacy definition) decreased 3.1 percent, and aggravated assault offenses increased 1.3 percent. The violent crime of robbery decreased by 4.7 percent when compared with the 2018 estimate.
- The 2019 violent crime rate was 366.7 per 100,000 inhabitants, down 1.0 percent when compared with the 2018 violent crime rate.
- The murder rate was 5.0 per 100,000 inhabitants in 2019, remaining steady when compared with the estimated rate for the previous year.
- The estimated number of property crimes in 2019 was 6,925,677, a 4.1 percent decrease from the 2018 estimate.
- Of the property crimes, the estimated number of burglary offenses decreased 9.5 percent, and larceny-theft offenses declined 2.8 percent. The estimated number of motor vehicle thefts decreased 4.0 percent.

- The 2019 property crime rate was 2,109.9 per 100,000, a 4.5 percent decrease when compared with the 2018 rate.

Most Wanted

Ten Most Wanted

Fugitives

Terrorism

Kidnappings / Missing Persons

Seeking Information

Bank Robbers

ECAP

ViCAP

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# EXHIBIT 102

**American Homicide Supplemental Volume (AHSV)**  
**Weapons (W)**

Randolph Roth

October, 2009

A supplement to Randolph Roth, *American Homicide*  
(The Belknap Press of Harvard University Press, 2009)

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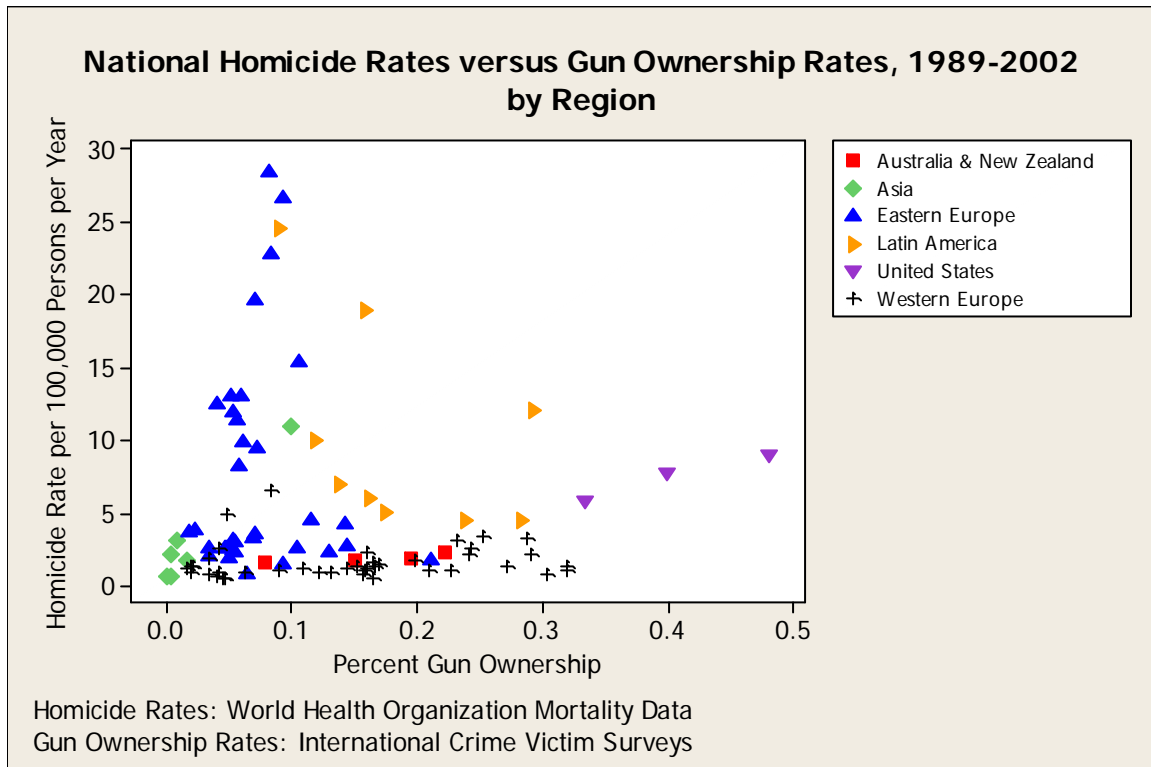
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## **The World**

**Figure W 1**



Note: The data for Columbia, 1997, were excluded. It had a gun ownership rate of 18 percent and a homicide rate of 57 per 100,000 persons per year.

## **The United States since World War I**

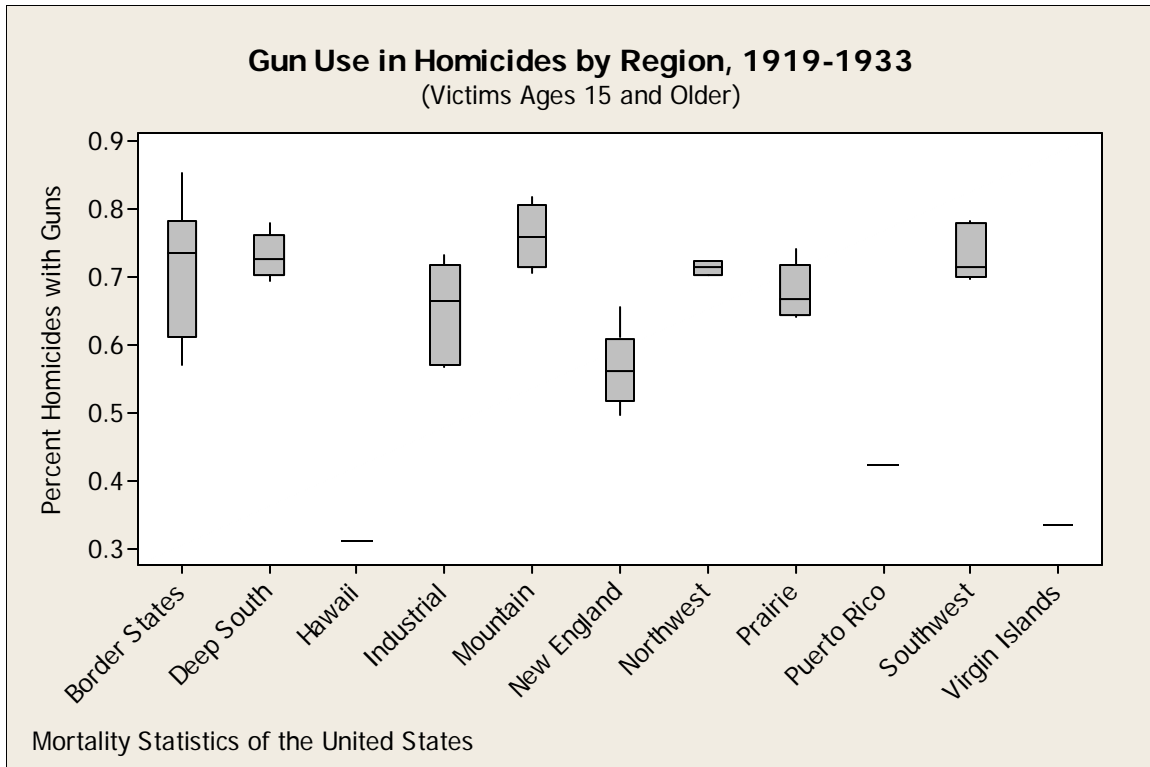
### **Sources**

The main sources for studying gun use in homicides since World War I are the *Mortality Statistics of the United States* (1919-33), published by the Bureau of the Census, and the *Supplemental Homicide Reports* (1976-2003), compiled by the Federal Bureau of Investigation. The *Mortality Statistics* do not distinguish among types of homicides, but the SHR's do.

The main sources for studying gun ownership



**Figure W 2**



**Figure W 3**

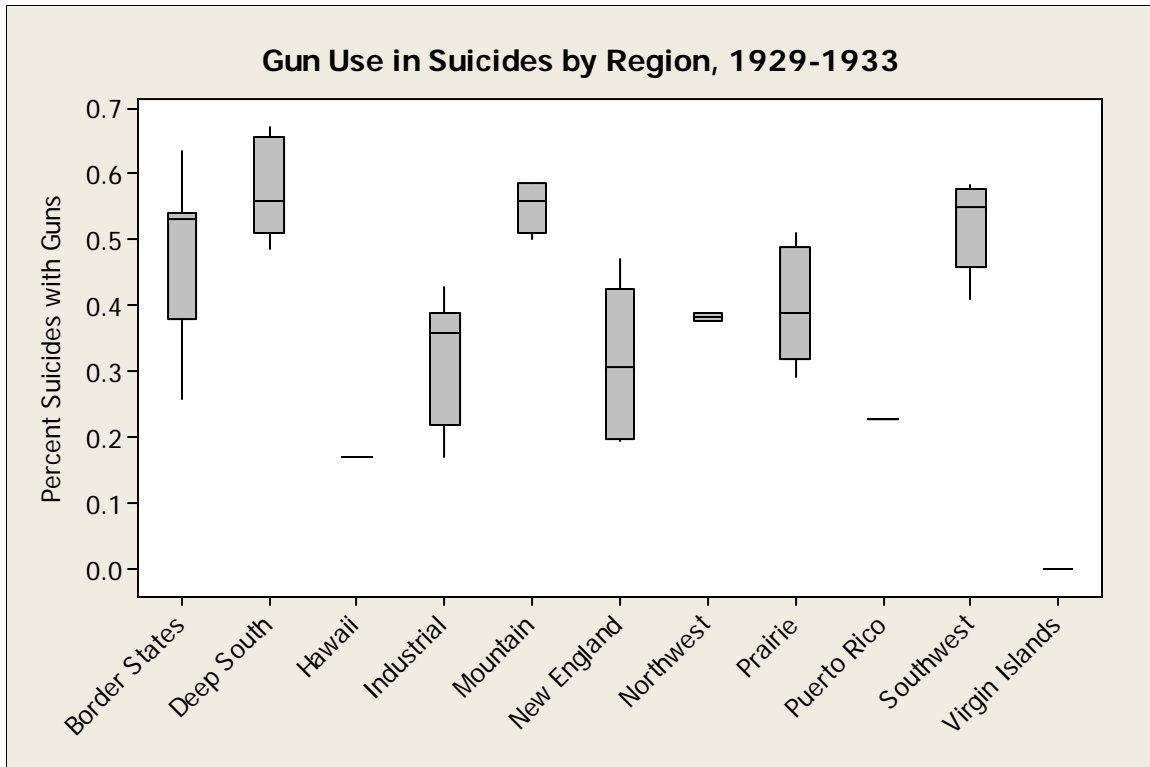
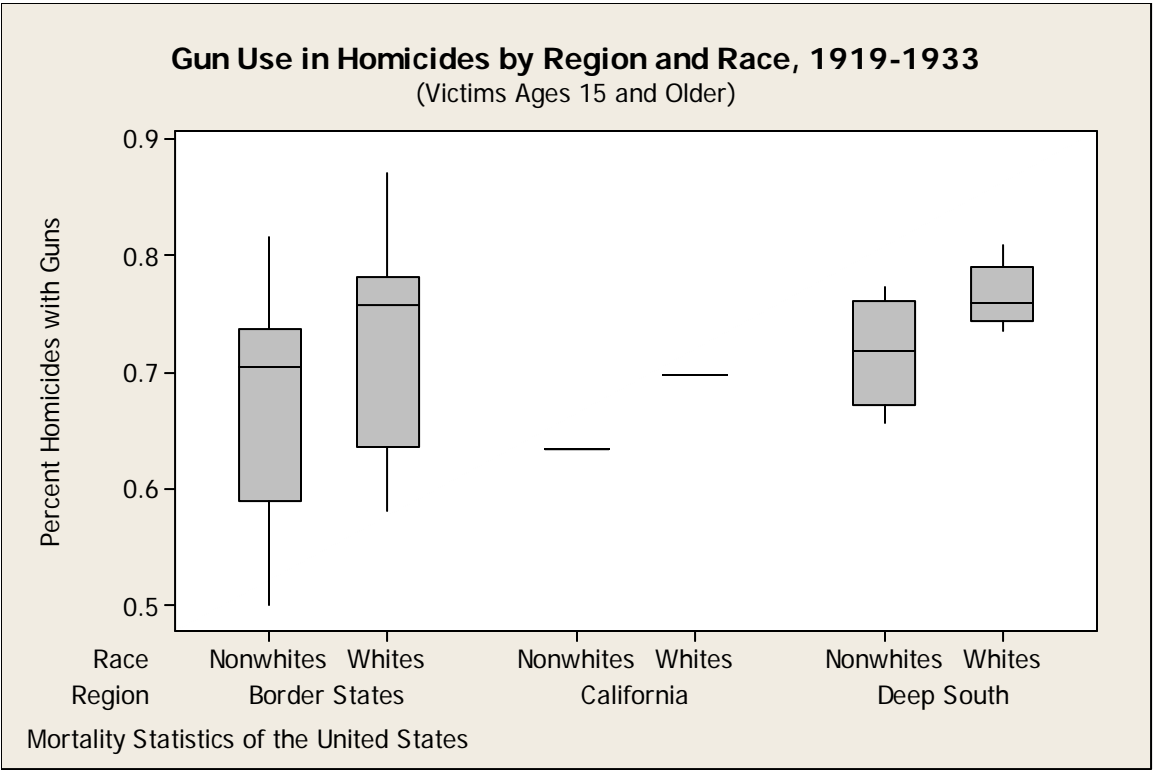
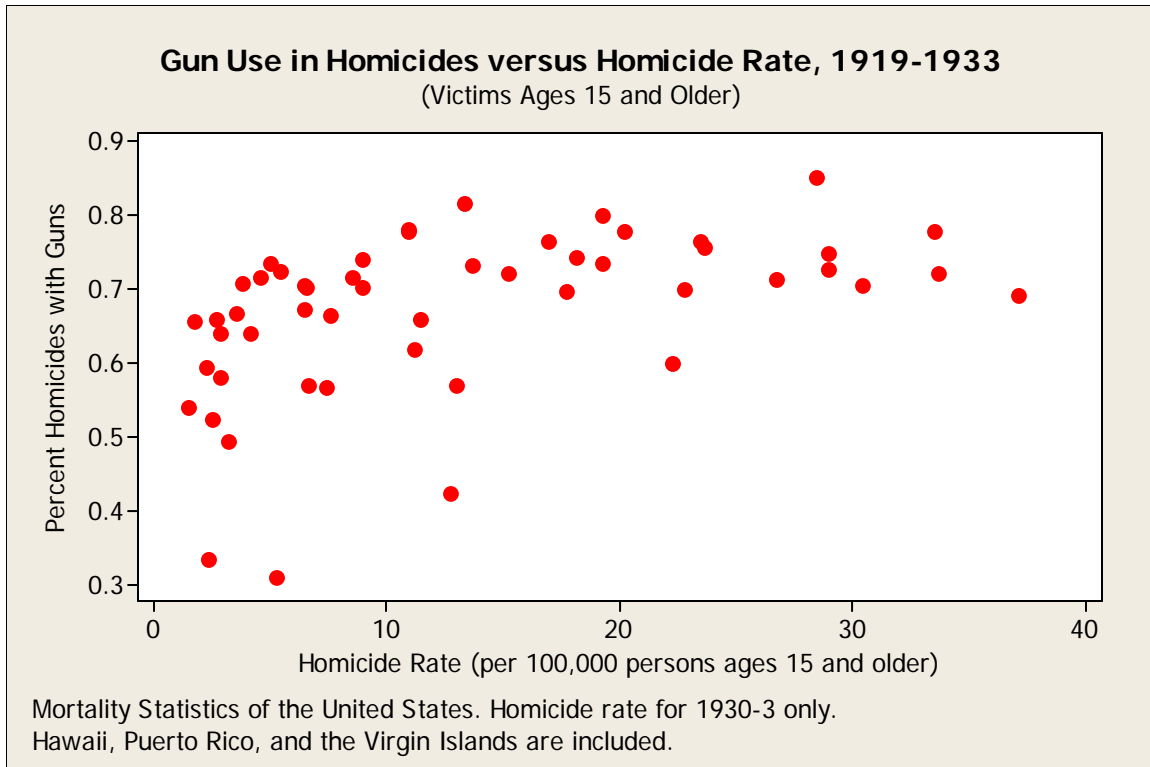


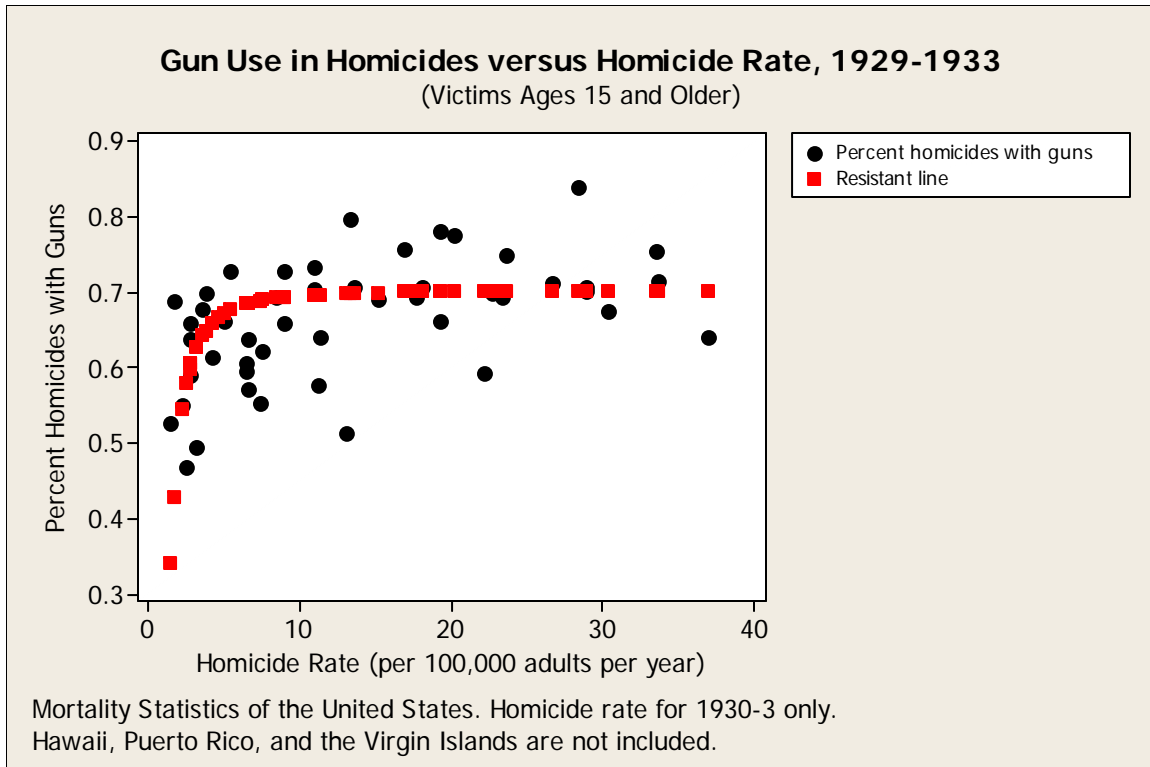
Figure W 4



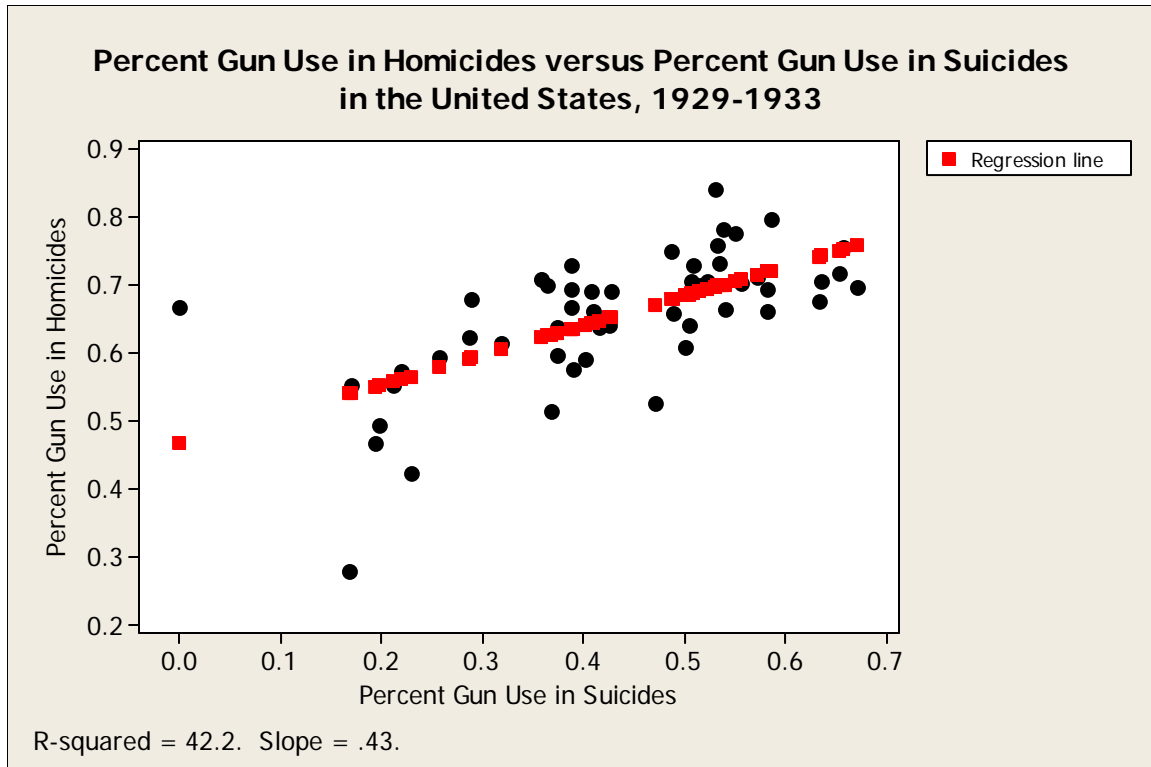
**Figure W 5**



**Figure W 6**



**Figure W 7**





**Figure W 8**

**Gun Use in Homicides in the United States by Region**

	1919-33	1976-2003
Alaska	--	.65
Border States	.76	.72
Deep South	.73	.72
Hawaii	.31	.39
Industrial States	.66	.67
Mountain States	.76	.62
New England	.53	.56
Northwest	.71	.57
Prairie States	.70	.62
Southwest	.72	.67
Total		.69

Source: Bureau of the Census, Mortality Statistics of the United States (1919-33), and Federal Bureau of Investigation, Supplemental Homicide Reports (1976-2003).

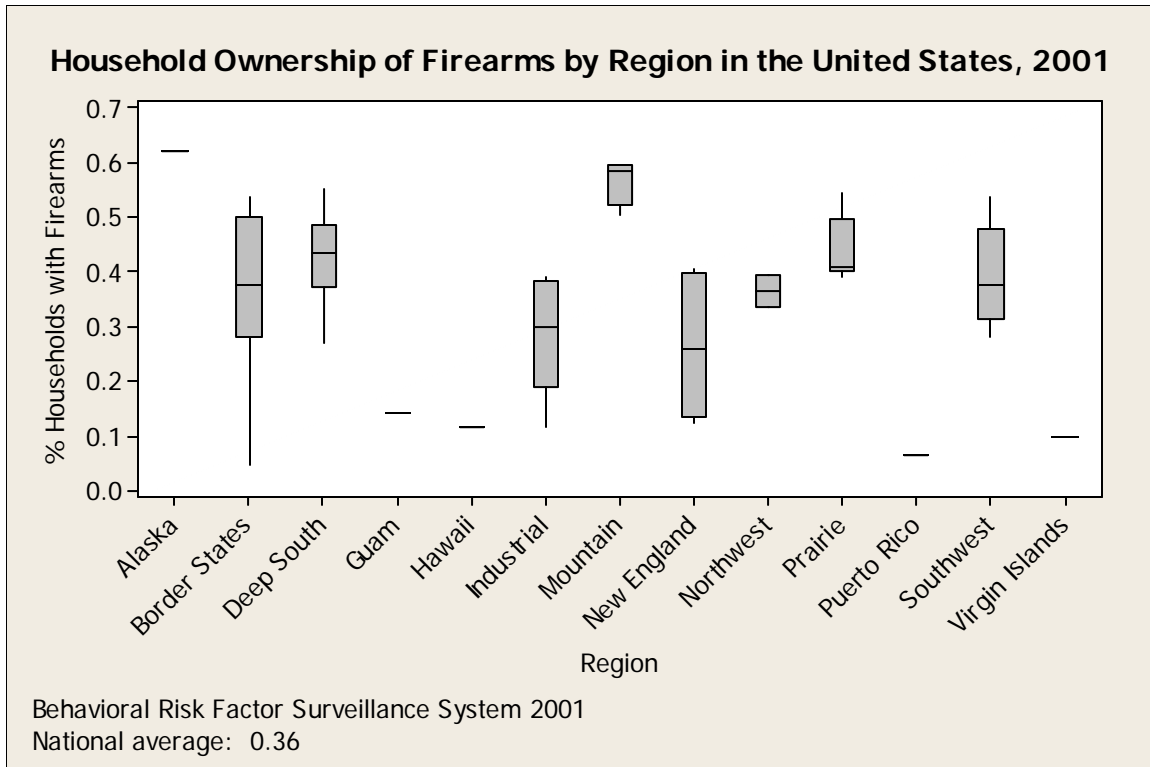
**Figure W 9**

**Gun Use and Homicide Type in the United States, 1976-2003**

Spouse	.69
Ex-Spouse	.81
Lover	.60
Gay Relationship	.30
Relative	.62
Stranger	.71
Known to Victim	.67
Unknown Relationship	.72

Source: Federal Bureau of Investigation, Supplemental Homicide Reports.

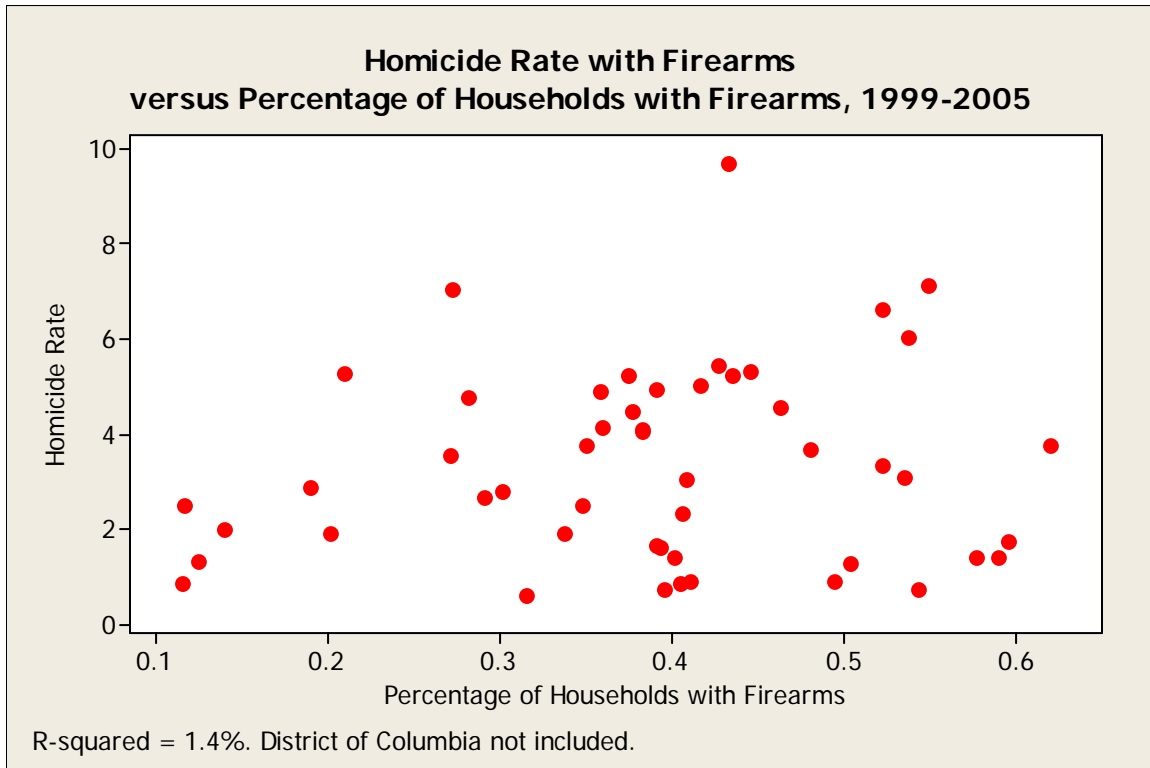
**Figure W 10**



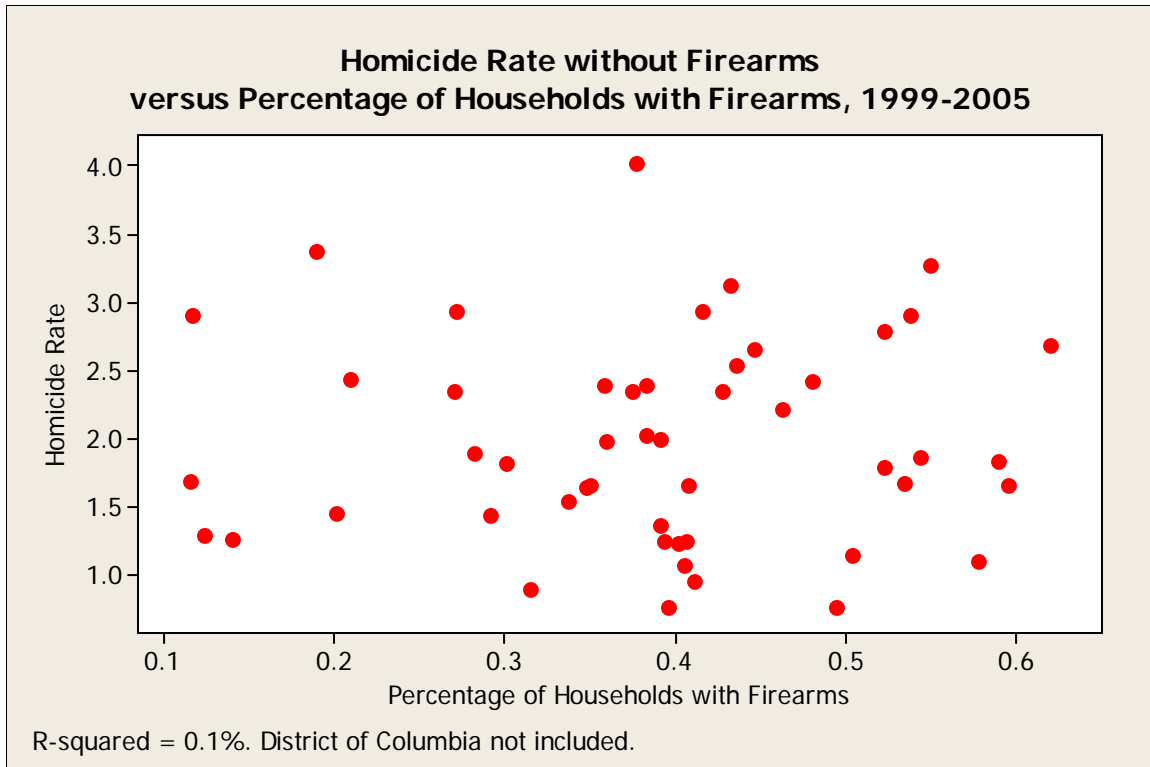
Note: Respondents who “refused to answer” whether they owned guns were assumed to be gun owners, and those who were “unsure” whether they owned guns were not included in the total number of respondents. Of the 421,334 persons who responded to the BRFSS survey, 15,424 refused to answer (3.7 percent) and 2,148 (0.5 percent) were unsure. The pattern of household ownership of firearms changes little when respondents who “refused to answer” are excluded from the analysis, except in the Mountain states, where 6.8 percent refused to answer.

The Behavioral Risk Factor Surveillance System (BRFSS) is a collaborative project of the Centers for Disease Control and Prevention (CDC), and U.S. states and territories. The BRFSS, administered and supported by CDC's Behavioral Surveillance Branch, is an on going data collection program designed to measure behavioral risk factors in the adult population 18 years of age or older living in households. The BRFSS was initiated in 1984, with 15 states collecting surveillance data on risk behaviors through monthly telephone interviews. The number of states participating in the survey increased, so that by 2001, 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands were participating in the BRFSS. For details, see Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Users Guide. 1998.

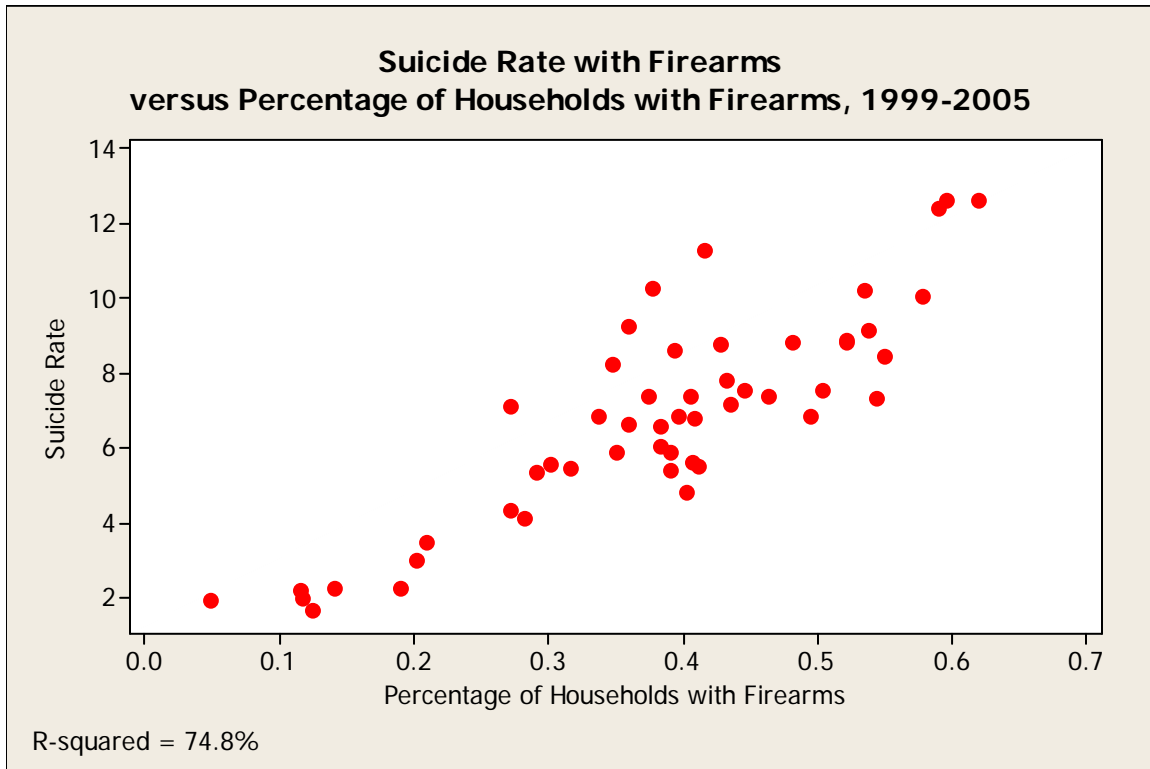
**Figure W 11**



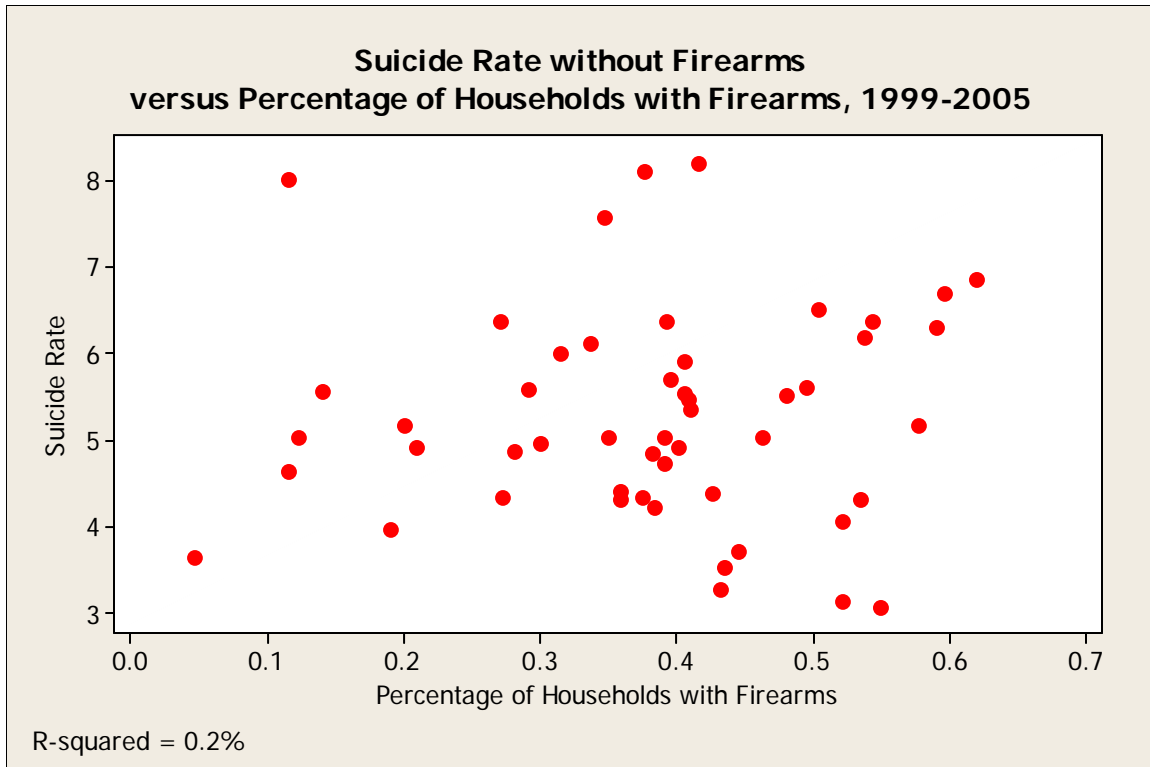
**Figure W 12**



**Figure W 13**



**Figure W 14**



## **England**



**Figure W 15**

**Weapons Use in Homicides in Middlesex County, England, 1549-1632**

	Household	Marital	Unrelated	Relative	All
Dagger	0	0	21	0	21
Sword	1	0	94	0	95
Other sharp	0	4	23	0	27
Pike	1	0	2	0	3
Blunt	1	2	27	1	31
Gun	0	0	5	0	5
Physical	0	2	19	2	23
Poison	1	2	1	0	4
Unknown	0	0	12	1	13
All	4	10	204	4	222

**Percentages**

Dagger	0.00	0.00	0.10	0.00	0.09
Sword	0.25	0.00	0.46	0.00	0.43
Other sharp	0.00	0.40	0.11	0.00	0.12
Pike	0.25	0.00	0.01	0.00	0.01
Blunt	0.25	0.20	0.13	0.25	0.14
Gun	0.00	0.00	0.02	0.00	0.02
Physical	0.00	0.20	0.09	0.50	0.10
Poison	0.25	0.20	0.00	0.00	0.02
Unknown	0.00	0.00	0.06	0.25	0.06

**Figure W 16**

**Weapons Use in Homicides in Essex and Surrey Counties, England, 1559-1625**

	Household	Marital	Unrelated	Relative	All
Dagger	1	1	28	0	30
Sword	1	1	69	1	72
Other sharp	3	2	70	6	81
Pike	1	0	10	0	11
Blunt	10	2	84	5	101
Gun	0	0	2	0	2
Physical	6	7	38	3	54
Poison	1	6	2	2	11
Unknown	0	0	1	0	1
All	23	19	304	17	363

Percentages

Dagger	0.04	0.05	0.09	0.00	0.08
Sword	0.04	0.05	0.23	0.06	0.20
Other sharp	0.13	0.11	0.23	0.35	0.22
Pike	0.04	0.00	0.03	0.00	0.03
Blunt	0.43	0.11	0.28	0.29	0.28
Gun	0.00	0.00	0.01	0.00	0.01
Physical	0.26	0.37	0.13	0.18	0.15
Poison	0.04	0.32	0.01	0.12	0.03
Unknown	0.00	0.00	0.00	0.00	0.00

**Figure W 17**

**Weapons Use in Homicides among Unrelated Men  
in England, 1549-1632**

	Middlesex, 1549-1632	Essex and Surrey, 1559-1625
Dagger	.12	.10
Sword	.53	.24
Other Sharp	.10	.23
Pike	.01	.04
Blunt	.13	.28
Gun	.02	.01
Physical	.07	.10
Poison	.00	.00
Unknown	.02	.00
N	178	290

## **United States, 1770-1900**

**Figure W 18**

**Proportion of Handguns among Guns Used in Homicides**

	VT & NH	GA & SC	VA	OH	CA
1770-1815 <sup>1</sup>	.10	.00		.17	
1816-1846	.50	.50		--	
1847-1865	.35	.65		.58	.84
1866-1880	.74	.67	.78	.91	.73
1881-1900	.72	.74	.75	.89	.77

NOTE: The proportions are equal to the number of known handguns divided by the number of known handguns plus the number of known long guns. The proportions are lower if guns of unspecified type are included in the denominator, but the trends in each jurisdiction are similar.

Cuyahoga County, Ohio: The proportion cannot be calculated, 1822-46, because there were no gun homicides. The proportions were .67, 1847-65, and 1.00, 1866-76.

Florida: The proportion was .31 for white assailants, 1821-1861. No black or Native American assailants were reported to have committed a homicide with a handgun.

Douglas County, Nebraska: The proportion was .89, 1880-1900.

Las Animas County, Colorado: The proportion was .94, 1880-1900.

Gila County, Arizona: The proportion was .66, 1880-1900.

<sup>1</sup> The data begin in 1770 in Vermont and New Hampshire, in 1790 in Georgia and South Carolina, in 1798 in Ohio, and in 1849 in California. The data from Virginia do not distinguish adequately between handguns and other guns before the end of the Civil War, and no gun homicides occurred in Ross, Holmes, or Cuyahoga counties, Ohio, between 1816 and 1846. There are no data yet available for Cuyahoga County, 1877-1900.

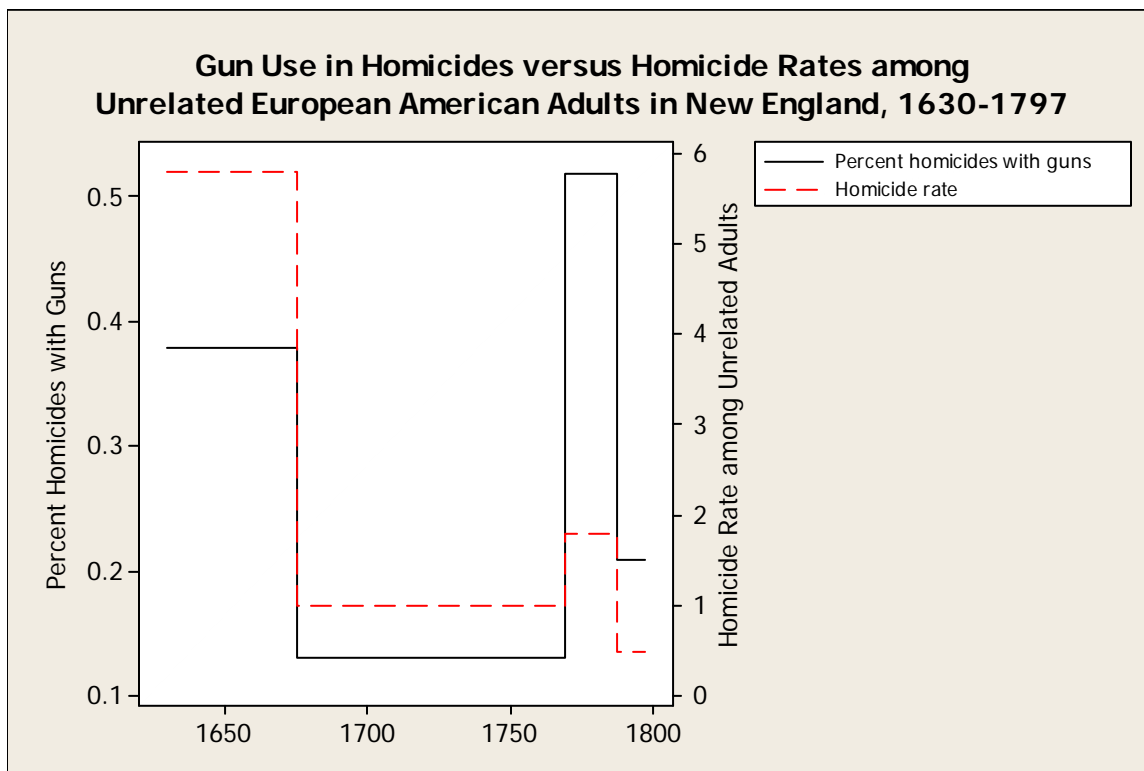


## **The North**

## **New England, 1630-1797**



**Figure W 19**



**Figure W 20**

**Weapons Use in Homicides among European American Adults  
in New England, 1630-1797**

	1630- 1675	1676- 1769	1770- 1787	1788- 1797
Gun	.36	.13	.46	.20
Sharp	.20	.27	.17	.20
Blunt	.16	.24	.12	.28
Physical	.28	.33	.23	.32
Poison	.00	.03	.02	.00
Whip	.00	.00	.00	.00
Number of Weapons Identified	25	94	94	25
Number of Weapons Not Identified	5	11	5	1
% Unknown Weapon	.17	.10	.05	.04

Note: Nine of the 24 known homicides among unrelated adults with known weapons, 1630-1675, were committed with guns (38 percent); 10 of 77, 1676-1769 (13 percent), 42 of 81, 1770-1787 (52 percent), and 4 of 19, 1788-1797 (21 percent).

**Figure W 21**

**Gun Use and Homicide Type in Homicides among European American Adults  
in New England, 1630-1797**

	Unrelated	Marital	Relative
Percent Homicides Committed with Guns	.34	.00	.20
Number of Weapons Identified	194	24	20
Number of Weapons Not Identified	18	3	1
% Unknown Weapon	.08	.11	.05

**Figure W 22**

**Weapons Use in Homicides of African Americans and Native Americans  
by European American Adults in New England, 1676-1797**

	Black Victims	Native American Victims
Gun	.29	.57
Sharp	.00	.17
Blunt	.21	.03
Physical	.29	.23
Poison	.00	.00
Whip	.21	.00
Number of Weapons Identified	14	36
Number of Weapons Not Identified	3	8
% Unknown Weapon	.18	.18

**Figure W 23**

**Gun Use and Homicide Type in Homicides among Native American Adults  
in New England, 1676-1797**

	Unrelated	Marital	Relative	Romance
Percent Homicides Committed with Guns	.14	.13	.00	.50
Number of Weapons Identified	43	16	4	2
Number of Weapons Not Identified	9	1	2	0
% Unknown Weapon	.17	.06	.33	.00

Note: There were only 5 known homicides of blacks by blacks in New England, 1676-1797. Two were marital homicides and three were homicides of unrelated adults. None were committed with guns.

## **New Netherlands, 1636-1656**

**Figure W 24**

**Weapons Use in Homicides among European American Adults  
in New Netherlands, 1638-1656**

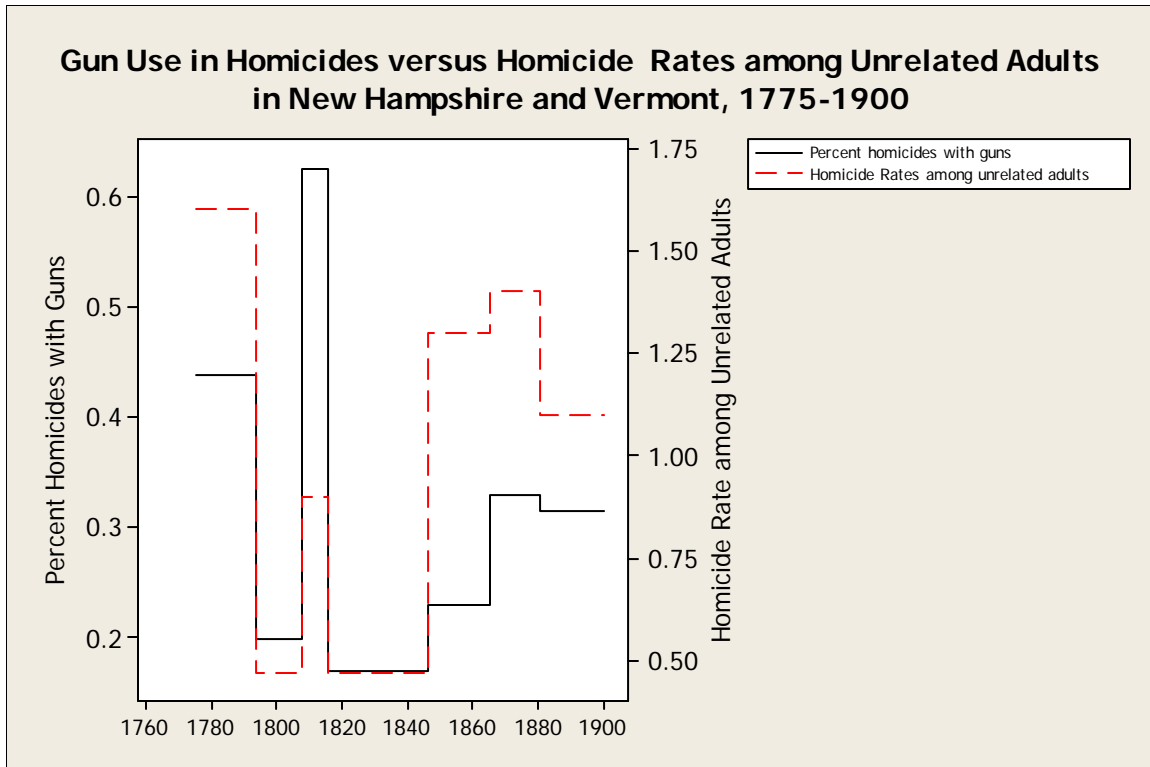
Gun	.40
Sharp	.20
Blunt	.20
Physical	.20
Poison	.00
Whip	.00
Number of Weapons Identified	5
Number of Weapons Not Identified	3
% Unknown Weapon	.38

Note: All known homicides in New Netherlands, 1638-1656, were among unrelated adults.

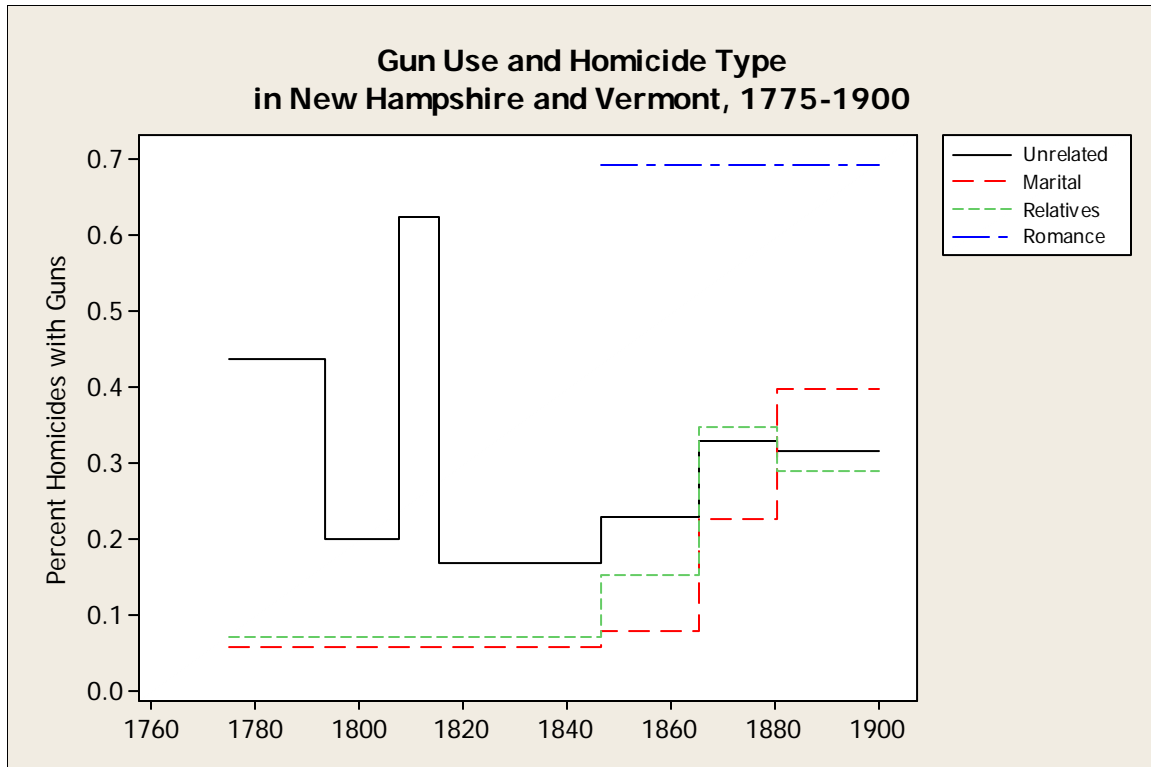
## **New Hampshire and Vermont, 1775-1900**



**Figure W 25**



**Figure W 26**



**Figure W 27**

**Gun Use in Homicides in New Hampshire and Vermont, 1775-1900**

	1775-1815	1816-1846	1847-1880	1881-1900
Homicides among unrelated adults	.49	.17	.28	.32
Marital homicides	.06	.06	.11	.40
Homicides of Relatives	.07	.07	.28	.29
Romance homicides	--	--	.69	.69
All homicides	.40	.14	.26	.35
Number of Weapons Identified	45	70	280	213
Number of Weapons Not Identified	4	5	12	3
% Unidentified Weapons	.08	.07	.04	.01

Note: Does not include homicides of Native Americans.

**Figure W 28**

**Weapons Use in Homicides in New Hampshire and Vermont, 1775-1900**

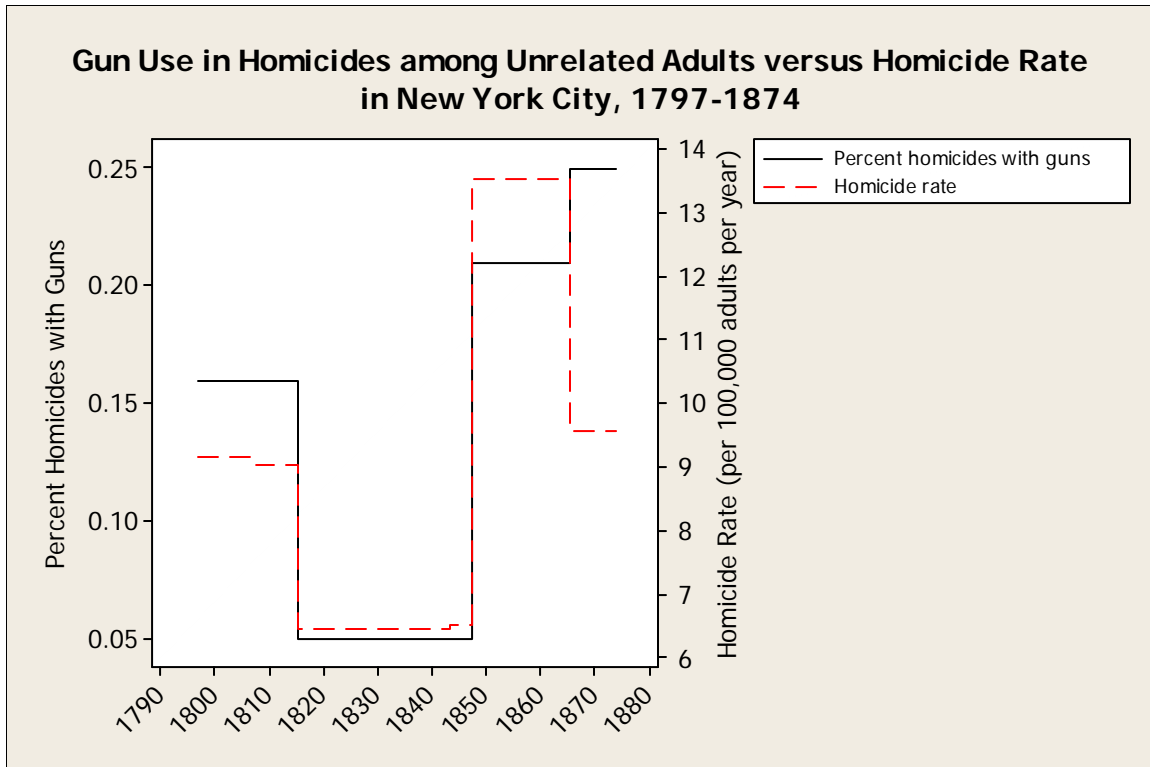
	1798-1815	1816-1846	1847-1880	1881-1900
Gun	.40	.14	.26	.35
Sharp	.16	.21	.25	.18
Blunt	.27	.43	.24	.16
Physical	.18	.19	.17	.24
Poison	.00	.03	.07	.07
Number of weapons Identified	45	70	280	213
Number of weapons Not identified	4	5	12	3

Note: Does not include homicides of Native Americans.

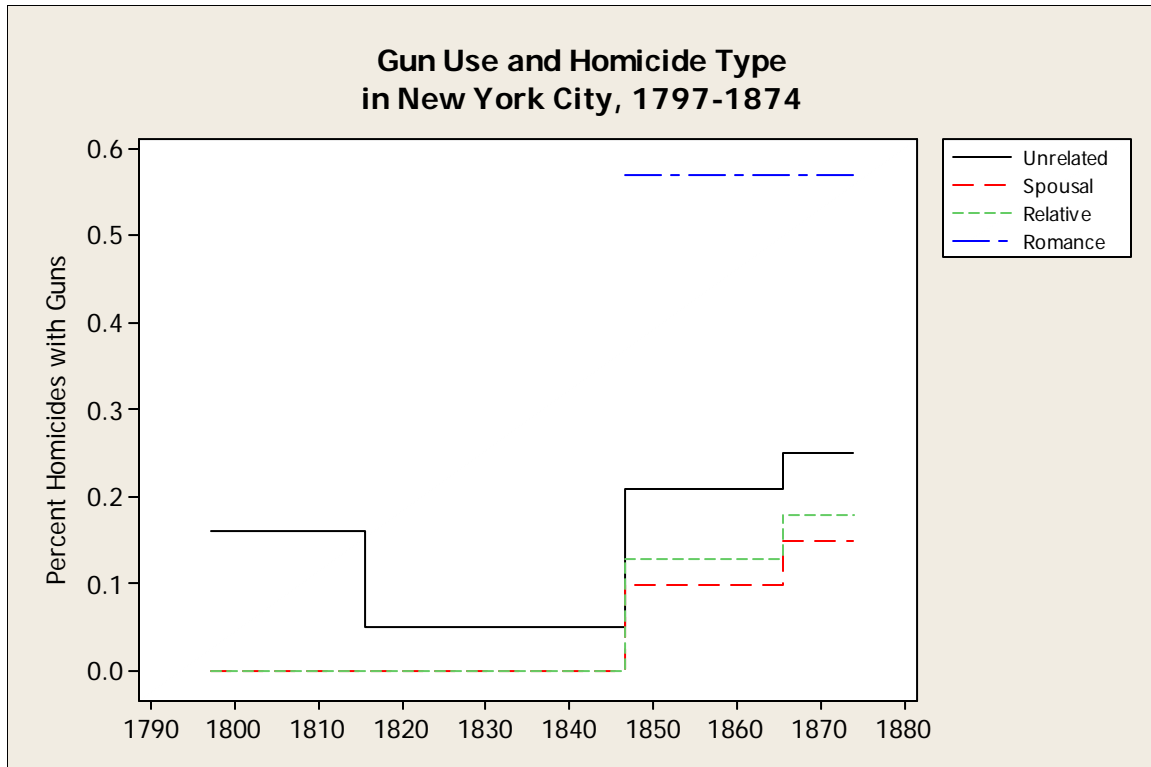
## **New York City, 1797-1874**

The data are from Monkkonen (2001). The data for 1797-1874 are from Monkkonen's data on individual homicides. The data for 1797-1900 are from Monkkonen's data on annual homicides.

**Figure W 29**



**Figure W 30**



**Figure W 31**

**Gun Use in Homicides in New York City, 1797-1874**

	1797-1815	1816-1846	1847-1865	1866-1874
Homicides among unrelated adults	.16	.05	.21	.25
Spousal homicides	.00	.00	.10	.15
Homicides of relatives	.00	.00	.13	.18
Homicides of lovers <sup>1</sup>	--	--	.57	.57
All homicides	.13	.05	.20	.25
Number of weapons Identified	75	279	919	437
Number of weapons Not identified	22	33	149	25

<sup>1</sup> Includes all homicides of lovers, 1797-1874. N = 36. They are not included in the numbers of weapons identified and not identified. One weapon involved in the homicide of a lover could not be identified.

1797-1815: 22 weapons could not be identified, 2 in spouse homicides and 20 in non-family homicides. N: 8 spouse, 3 family, 64 non-family.

1816-1846: 33 weapons could not be identified, 2 in spouse homicides and 31 in non-family homicides. N: 41 spouse, 5 family, 233 non-family.

1847-1865: 149 weapons could not be identified, 12 in spouse homicides and 137 in non-family homicides. N: 106 spouse, 30 family, 783 non-family.



1866:1874: Only 25 weapons could not be identified, all in non-family homicides. N: 59 spouse, 11 family, 367 non-family.

**Figure W 32**

**Weapons Use in Homicides in New York City, 1797-1900**

	Gun	Knife	Poison	Other
1797-1815	.13	.19	.04	.65
1816-1847	.05	.22	.03	.71
1848-1865	.20	.30	.02	.47
1866-1874	.25	.27	.01	.46
1875-1900	.35	.21	--	.44
N	867	772	37	1508

Note: 230 weapons could not be identified through 1874.

**Figure W 33**

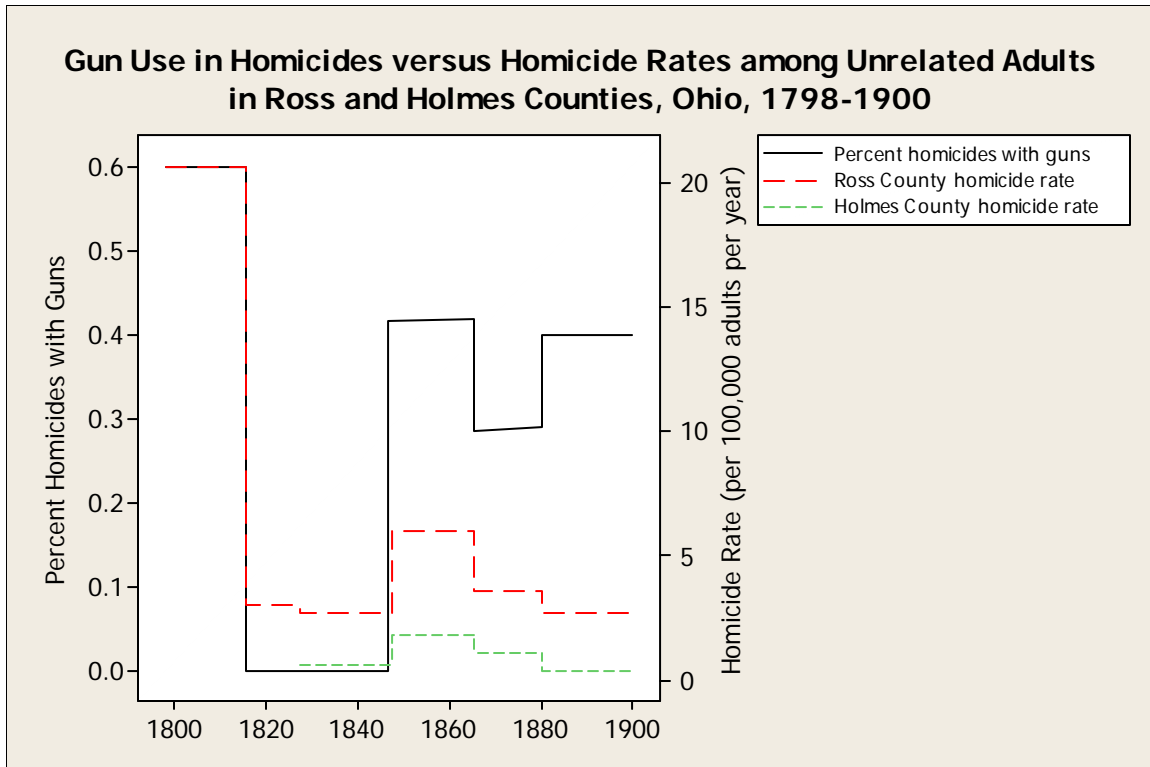
**Ethnicity and Weapons Used in Homicides in New York City, 1797-1874**

Ethnicity	Percent Homicides with Guns	
	1797-1860	1861-1874
Native-born White	.27	.50
German	.28	.37
Irish	.09	.26
Black	.03	.26
Italian	.00	.21

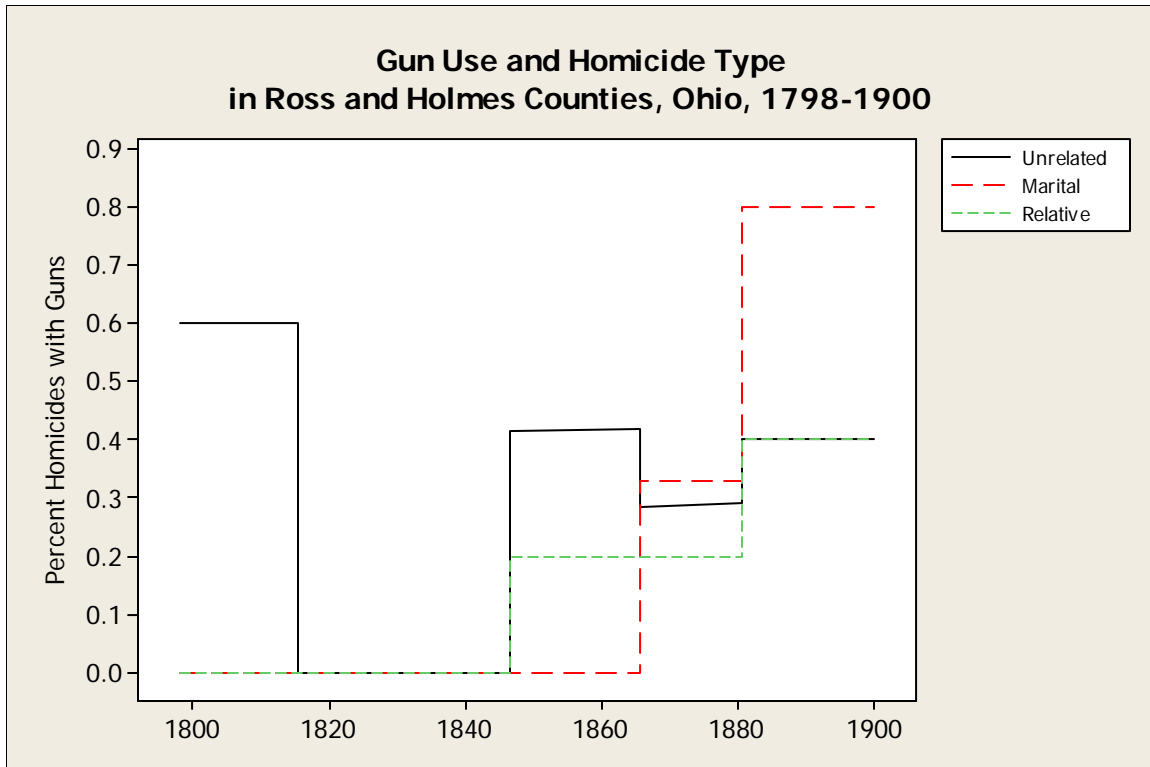
Monkkonen (2001: 35).

**Ross and Holmes Counties, Ohio, 1798-1900**

**Figure W 34**



**Figure W 35**



Note: There were only two romance homicides in these counties. Guns were not used in either homicide.

**Figure W 36**

**Gun Use in Homicides in Ross and Holmes Counties,  
Ohio, 1798-1900**

	1798-1815	1816-1846	1847-1880	1881-1900
Homicides among unrelated adults	.60	.00	.37	.40
Marital homicides	--	.00	.17	.80
Homicides of Relatives	--	.00	.20	.40
All homicides	.60	.00	.31	.48
Number of weapons Identified	10	16	51	25
Number of weapons Not identified	3	0	5	0

Note: Does not include homicides of Native Americans.

**Figure W 37**

**Weapons Use in Homicides in Ross and Holmes Counties,  
Ohio, 1798-1900**

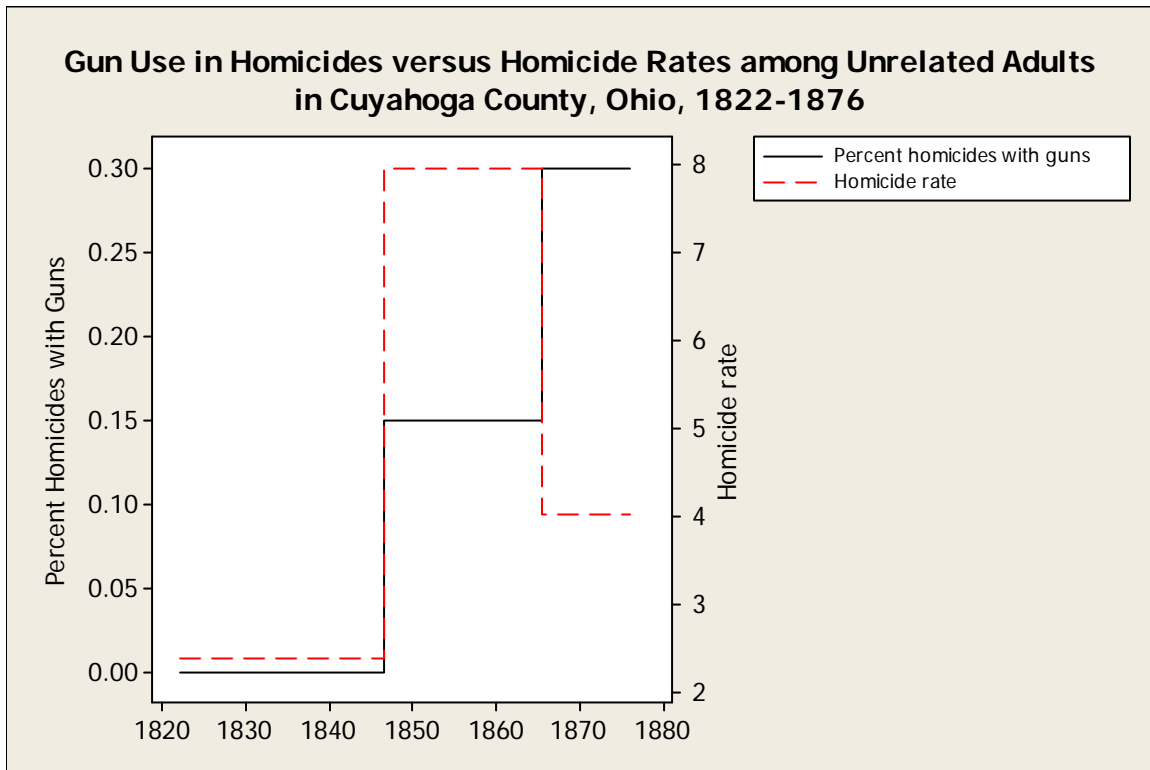
	1798-1815	1816-1846	1847-1880	1881-1900
Gun	.60	.00	.31	.48
Sharp	.10	.31	.22	.24
Blunt	.20	.31	.29	.20
Physical	.10	.38	.12	.08
Poison	.00	.00	.06	.00
Number of weapons Identified	10	16	51	25
Number of weapons Not identified	3	0	5	0

Note: Does not include homicides of Native Americans.

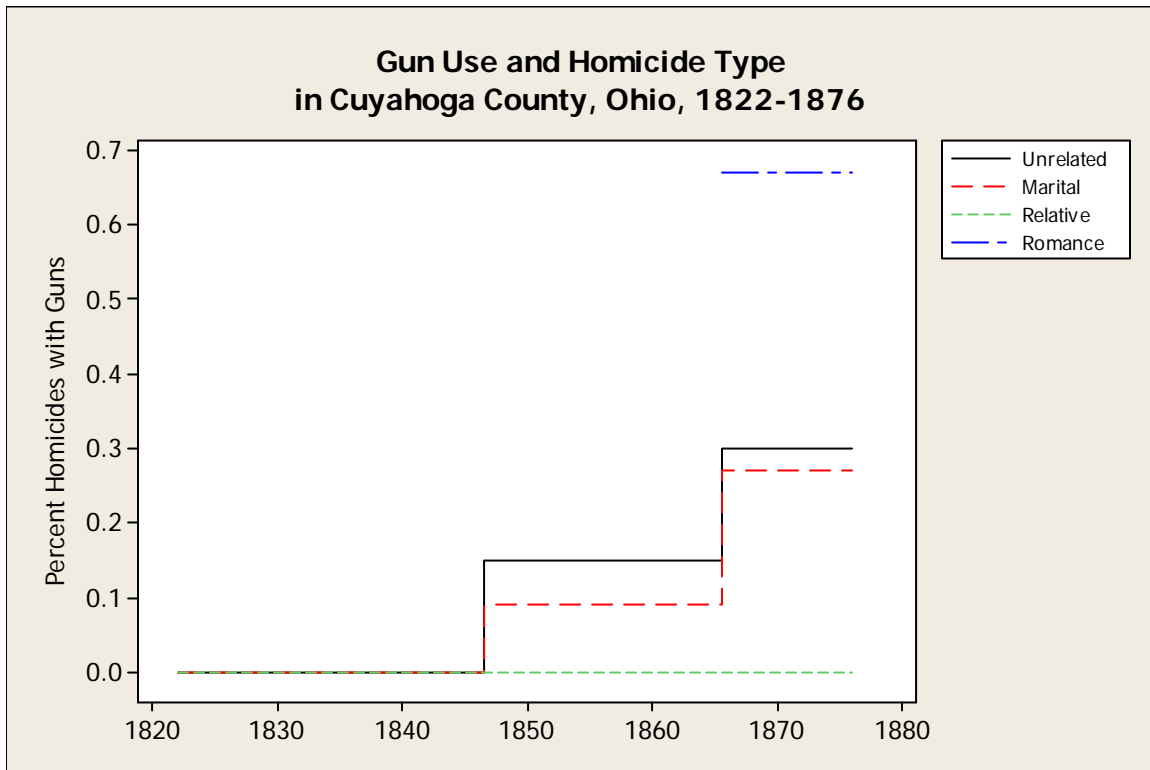


## **Cuyahoga County, Ohio, 1822-1876**

**Figure W 38**



**Figure W 39**



**Figure W 40**

**Gun Use in Homicides in Cuyahoga County,  
Ohio, 1822-1876**

	1822-1846	1847-1865	1866-1876
Homicides among unrelated adults	.00	.15	.30
Marital homicides	.00	.09	.27
Homicides of Relatives	--	--	--
Romance homicides	--	--	.67
All homicides	.00	.13	.29
Number of Weapons Identified	6	67	65
Number of Weapons Not Identified	0	0	2
% Unknown Weapons	.00	.00	.03

**Figure W 41**

**Weapons Use in Homicides in Cuyahoga County,  
Ohio, 1822-1876**

	1822-1846	1847-1865	1866-1876
Gun	.00	.13	.29
Sharp	.00	.19	.26
Blunt	.50	.19	.08
Physical	.33	.33	.23
Poison	.00	.03	.03
Violence (Blunt or Physical)	.17	.12	.11
Number of Weapons Identified	6	67	65
Number of Weapons Not Identified	0	0	2
% Unknown Weapons	.00	.00	.03

**Calhoun, Henderson, and Williamson Counties, Illinois,  
1805-1900**

**Figure W 42**

**Weapons Use in Homicides in Calhoun, Henderson, and Williamson Counties,  
Illinois, 1805-1900**

	1805-1832	1833-1865 <sup>1</sup>	1866-1900
Gun	.75	.72	.66
Sharp	.13	.07	.19
Blunt	.00	.17	.10
Physical	.13	.03	.05
Number of Weapons Identified	9	38	66
Number of Weapons Not Identified	1	9	7
% Unknown Weapons	.10	.19	.10

<sup>1</sup> Only 3 known homicides occurred from the end of the frontier period in 1832 to the Mexican War (1833-1846). The weapon is known in only one of those homicides: a knife.

## **Chicago, 1879-1885**



**Figure W 43**

**Weapons Use in Homicides in Chicago, 1879-1885**

	Gun	Blunt	Physical	Sharp
Homicides among unrelated adults	.49	.19	.13	.19
Marital homicides	.48	.03	.24	.26
Homicides of Relatives	.63	.13	.13	.13
Romance homicides	.73	.18	.00	.09
All homicides	.51	.16	.14	.19
Number of Weapons Identified	245			
Number of Weapons Not Identified	1			
% Unknown Weapons	.00			

Note: A long gun was used in only one known case. All other homicides with known weapons appear to have been committed with revolvers.

**Figure W 44**

**Race, Ethnicity, and Gun Use in Homicides in Chicago, 1879-1885**

All homicides

German or Dutch	.69	35
English, Scots, or Welsh <sup>1</sup>	.55	100
French	.50	2
African American	.46	24
Irish	.45	44
Italian	.33	9
Scandinavian	.33	3
East European	.30	10
Chinese	.00	2
Unknown assailant	.38	16

<sup>1</sup> One unknown weapon was used by a Scots assailant.

Homicides among unrelated adults

German or Dutch	.71	17
English, Scots, or Welsh	.55	78
Irish	.51	37
French or French Canadian	.50	2
African American	.41	17
Scandinavian	.33	3
East European	.25	8
Italian	.25	8
Chinese	.00	2
Unknown assailant	.38	16

## **The Northeast and the Midwest, 1847-1900**

**Figure W 45**

**Race, Ethnicity, and Gun Use in Homicides among Unrelated Adults  
in the Northeast and Midwest, 1847-1900<sup>1</sup>**

	Guns	Known Weapons	Percentage Gun Use
German or Dutch	24	48	.50
English, Scots, or Welsh	156	340	.46
Italian	5	14	.36
African American	11	31	.35
East European	3	9	.33
French	11	35	.31
Unknown assailant	33	107	.31
Scandinavian	2	7	.29
Irish	33	118	.28
Chinese	0	2	.00
All <sup>2</sup>	278	711	.39

<sup>1</sup> Includes data from New Hampshire and Vermont; Chicago; Calhoun, Henderson, and Williamson counties, Illinois; and Cuyahoga, Holmes, and Ross counties, Ohio.

<sup>2</sup> Gun use in family and intimate homicides was nearly identical: 34 percent.

**Figure W 46**

**Race, Ethnicity, and Gun Use in All Homicides  
in the Northeast and Midwest, 1847-1900<sup>1</sup>**

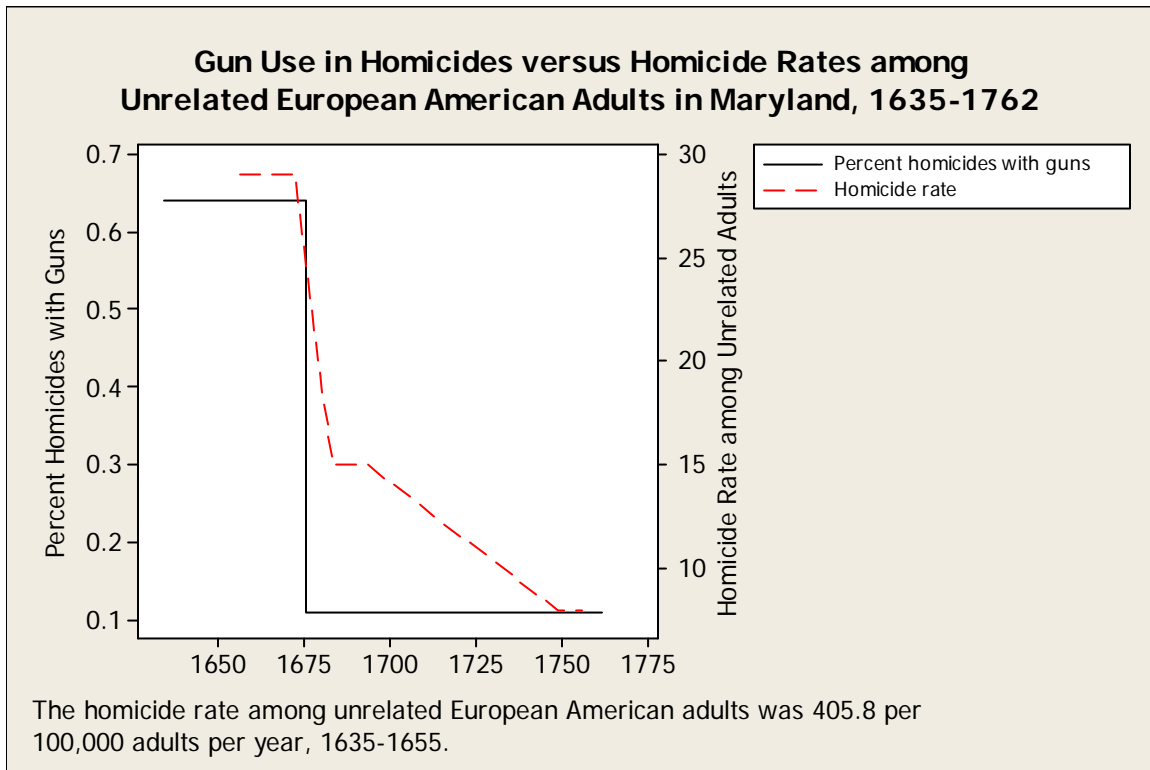
	Guns	Known Weapons	Percentage Gun Use
German or Dutch	39	80	.49
English, Scots, or Welsh	233	543	.43
Italian	6	15	.40
African American	17	47	.36
Eastern European	5	14	.36
French	15	49	.31
Unknown assailant	33	108	.31
Scandinavian	2	7	.29
Irish	38	167	.23
Chinese	0	2	.00
All	388	1032	.38

<sup>1</sup> Includes data from New Hampshire and Vermont; Chicago; Calhoun, Henderson, and Williamson counties, Illinois; and Cuyahoga, Holmes, and Ross counties, Ohio.

## **The South**

## **Maryland, 1635-1762**

**Figure W 47**





**Figure W 48**

**Gun Use in Homicides among European Americans in Maryland, 1635-1762**

	1635-1675	1676-1762
Homicides among unrelated adults	.40	.11
Marital homicides	.00	.00
Homicides of Relatives	--	.00
Romance homicides	--	--
All homicides	.40	.10
Number of Weapons Identified	43	79
Number of Weapons Not Identified	14	19
% Unknown Weapons	.25	.19

Note: Assumes that only half of the twenty victims of political homicide in 1655 were killed by firearms. If all were killed with firearms, the proportion of victims of homicides among unrelated adults who were killed by guns, 1634-75, would have been 64 percent. Seventeen (or the higher figure of 27) of the 42 known homicides among unrelated adults with known weapons, 1635-1675, were committed with guns (40 percent); 8 of 71, 1676-1762 (11 percent).

**Figure W 49**

**Weapons Use in Homicides among European American Adults  
in Maryland, 1635-1762**

	1635-1675	1676-1762
Gun	.63	.10
Sharp	.05	.23
Blunt	.19	.38
Physical	.07	.28
Poison	.00	.01
Whip	.07	.00
Number of Weapons Identified	43	79
Number of Weapons Not Identified	14	19
% Unknown Weapon	.25	.19

**Figure W 50**

**Weapons Use in Interracial Homicides among Adults in Maryland, 1635-1762**

	European Assailant/ African Victim	African Assailant/ European Victim
Gun	.08	.21
Sharp	.25	.21
Blunt	.50	.29
Physical	.08	.29
Poison	.00	.00
Whip	.08	.00
Number of Weapons Identified	12	14
Number of Weapons Not Identified	1	5
% Unknown Weapon	.08	.26

## **Virginia, 1785-1900**

**Figure W 51**

**Weapons Use in Homicides in Virginia, 1785-1880**

	Percent used by assailants who were		
	African American	European American	Unknown
African American victims			
Gun	.11	.41	.60
Sharp	.36	.09	.00
Whip	.00	.19	.00
Other	.53	.31	.40
Number of weapons Identified	28	32	10
Number of weapons Not identified	4	2	3
European American victims			
Gun	.00	.33	.00
Sharp	.30	.33	.50
Whip	.00	.00	.00
Other	.70	.35	.50
Number of weapons Identified	10	40	2
Number of weapons Not identified	2	8	3

**Figure W 52**

**Weapons Use in Homicides in Virginia, 1881-1900**

Percent used by assailants who were			
	African American	European American	Unknown
African American victims			
Gun	.57	.33	1.00
Knife	.00	.00	.00
Other	.43	.67	.00
Number of weapons Identified	7	6	1
Number of weapons Not identified	4	0	0
European American victims			
Gun	.20	.71	1.00
Knife	.00	.12	.00
Other	.80	.17	.00
Number of weapons Identified	5	17	1
Number of weapons Not identified	0	0	0

Note: The race of the assailant could not be identified in 10 cases. The weapon is unknown in 6 of those cases. Three of the four known weapons were guns. One of the gun victims was black, the other two of unknown race.

**Figure W 53**

**Gun Use by Homicide Assailants in Virginia, 1785-1900**

Percent used by assailants who were			
	African American	European American	Unknown
1785-1880	.08	.36	.50
Known weapons	38	72	12
1881-1900 <sup>1</sup>	.46	.61	.80
Known weapons	13	23	5

<sup>1</sup> Includes victims of unknown race.

## **Georgia and South Carolina, 1779-1900**



**Figure W 54**

**Weapons Use in Homicides of African Americans  
in Georgia and South Carolina, 1779-1900**

	Percent used by assailants who were		
	African American	European American	Unknown
1779-1863			
Gun	.00	.32	-
Knife	.25	.11	-
Whip	.00	.32	-
Other	.75	.26	-
Number of weapons Identified	16	38	0
1864-1900			
Gun	.57	.77	.80
Knife	.11	.10	.20
Whip	.00	.00	.00
Other	.33	.13	.00
Number of weapons Identified	46	30	5

**Figure W 55**

**Weapons Use in Homicides of European Americans  
in Georgia and South Carolina, 1779-1900**

	Percent used by assailants who were		
	African American	European American	Unknown
1779-1863			
Gun	.17	.41	.50
Knife	.08	.26	.25
Whip	.00	.00	.00
Other	.75	.33	.25
Number of weapons Identified	12	70	4
1864-1900			
Gun	.56	.82	.83
Knife	.33	.04	.00
Whip	.00	.00	.00
Other	.11	.14	.17
Number of weapons Identified	9	82	6

**Figure W 56**

**Gun Use by Homicide Assailants in Georgia and South Carolina, 1779-1900**

	Percent used by assailants who were		
	African American	European American	Unknown
1779-1863	.07	.38	.50
Known weapons	28	108	4
1864-1900	.57	.80	.82
Known weapons	54	112	11

## **Florida, 1821-1861**

**Figure W 57**

**Weapons Use in Homicides in Florida by Race of Assailant, 1821-1861**

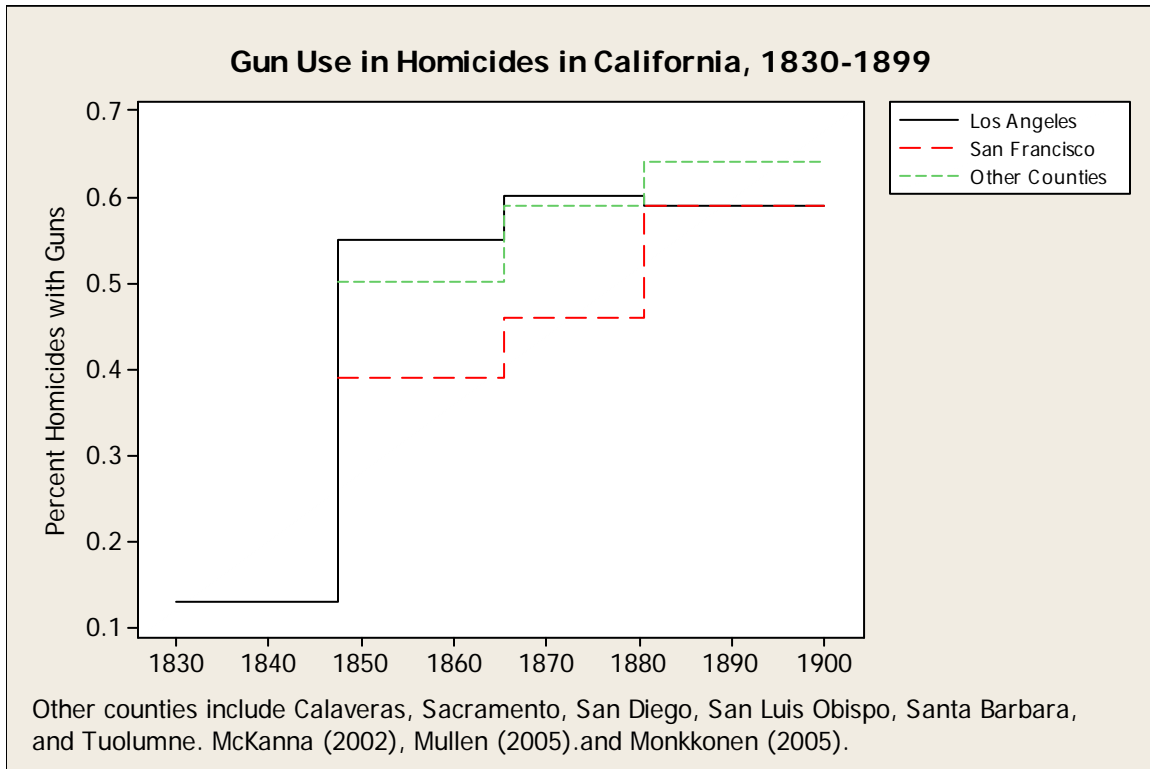
	Black	Native American	White
Gun	.30	1.00	.44
Sharp	.39	.00	.19
Blunt	.26	.00	.11
Physical	.04	.00	.04
Poison	.00	.00	.00
Whip	.00	.00	.03
Hanged	.00	.00	.19
Number of Weapons Identified	23	6	163
Number of Weapons Not Identified	27	4	172
% Unknown Weapon	.54	.40	.51

Note: Fifty-five percent of victims of white assailants who were not hanged were killed with guns.

## **The Trans-Mississippi West**

## **California, 1830-1900**

**Figure W 58**





**Figure W 59**

**Weapons Use in Homicides in Seven California Counties, 1849-1899**

	Gun	Sharp	Blunt	Physical	Poison
1849-1865	.50	.32	.07	.11	.00
1866-1880	.59	.26	.10	.03	.02
1881-1899	.65	.19	.09	.06	.01
All	.57	.26	.08	.08	.01
Known weapons	693	318	101	91	10

	Proportion of guns of known type that were handguns	Proportion of all guns that were known handguns
1849-1865	.84	.76
1866-1880	.73	.66
1881-1900	.77	.74

Note: Weapons could not be identified in 172 of 681 homicides (25 percent), 1849-1865; in 84 of 379 homicides (22 percent), 1866-1880; and in 66 of 475 homicides (14 percent), 1881-1899.

Source: McKanna (2002). Includes Calaveras, Sacramento, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, and Tuolumne counties.

**Figure W 60**

**Gun Use and Homicide Type in Seven California Counties, 1849-1899**

	Percent with guns	Homicides with known weapons	Percent with unknown weapons
Homicides among unrelated adults	.57	1138	.22
Family and intimate homicides	.67	75	.06
All homicides	.57	1213	.21

Source: McKanna (2002). Includes Calaveras, Sacramento, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, and Tuolumne counties.

**Figure W 61**

**Weapons Use in Homicides in Los Angeles, 1830-1900**

	Gun	Sharp	Blunt	Physical	Poison
1830-1846	.13	.56	.00	.31	.00
1847-1865	.55	.29	.07	.09	.00
1866-1880	.62	.20	.07	.11	.00
1881-1900	.63	.15	.07	.13	.02
All	.59	.21	.07	.12	.01
Known weapons	274	97	33	57	5

Note: Weapons could not be identified in 17 of 33 homicides (52 percent), 1830-1846; in 133 of 246 homicides (54 percent), 1847-1865; in 102 of 183 homicides (56 percent), 1866-1880; and in 38 of 294 homicides (13 percent), 1881-1900.

Source: Monkkonen (2005).

**Figure W 62**

**Gun Use and Homicide Type in Los Angeles, 1830-1900**

	Percent with guns	Homicides with known weapons	Percent with unknown weapons
Homicides among unrelated adults	.57	410	.41
Marital homicides	.77	39	.13
Homicides of relatives	.91	11	.21
Romance homicides	.33	6	.14
All homicides	.59	466	.38

Source: Monkkonen (2005).

**Figure W 63**

**Weapons Use in Homicides in San Francisco, 1849-1900**

	Gun	Sharp	Blunt	Physical	Poison
1849-1865	.40	.43	.06	.10	.02
1866-1880	.47	.40	.07	.06	.01
1881-1900	.60	.22	.08	.09	.01
All	.52	.32	.07	.08	.01
Known weapons	438	267	60	67	11

Note: Weapons could not be identified in 46 of 222 homicides (21 percent), 1849-1865; in 55 of 302 homicides (18 percent), 1866-1880; and in 92 of 512 homicides (18 percent), 1881-1900.

Source: Mullin (2005).

**Figure W 64**

**Gun Use and Homicide Type in San Francisco, 1849-1900**

	Percent with guns	Homicides with known weapons	Percent with unknown weapons
Homicides among unrelated adults	.50	684	.20
Marital homicides	.61	85	.15
Homicides of relatives	.38	22	.08
Romance homicides	.63	52	.09
All homicides	.52	843	.19

Source: Mullin (2005).

**Douglas County, Nebraska**  
**Gila County, Arizona**  
**Las Animas County, Colorado**  
**1880-1900**

**Figure W 65**

**Weapons Use in Homicides  
in Arizona, Colorado, and Nebraska, 1880-1900**

	Gun	Sharp	Blunt	Physical	Poison
Douglas county, Nebraska	.63	.10	.17	.10	.00
Las Animas County, Colorado	.66	.21	.09	.02	.02
Gila County, Arizona	.82	.09	.04	.04	.00
All homicides	.70	.12	.11	.06	.00

Proportion of Guns Used That Were Known Handguns:

Douglas County, Nebraska	.89
Las Animas County, Colorado	.94
Gila County, Arizona	.66

Note: 1 of 106 weapons in Douglas County, Nebraska, could not be identified, 26 of 73 in Las Animas County, Colorado, and 9 of 77 in Gila County, Arizona.

Source: McKanna (1997).



**Figure W 66**

**Gun Use and Homicide Type in Arizona, Colorado, and Nebraska, 1880-1900**

	Percent with guns	Homicides with known weapons	Percent with unknown weapons
Homicides among unrelated adults	.67	181	.17
Family and intimate homicides	.82	39	.00
All homicides	.70	220	.14

Source: McKanna (1997).

**Arizona, California, Colorado, and Nebraska, 1830-1900**

**Figure W 67**

**Race, Ethnicity, and Gun Use in Homicides in Arizona, California, Colorado, and  
Nebraska, 1830-1900**

	Percent with guns	Homicides with known weapons	Percent with unknown weapons
White, Non-Hispanic	.62	1683	.19
Asian	.55	265	.20
Hispanic	.53	320	.34
African American	.52	50	.07
Native American	.46	135	.30
Unknown	.40	289	.35
All	.57	2742	.23

Source: McKanna (1997, 2002), Monkkonen (2005), and Mullin (2005).



# EXHIBIT 103

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### The Right to Train: A Pillar of the Second Amendment

Joseph G.S. Greenlee

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## THE RIGHT TO TRAIN: A PILLAR OF THE SECOND AMENDMENT

Joseph G.S. Greenlee \*

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## INTRODUCTION

Since the Supreme Court confirmed that the Second Amendment protects “the individual right to possess and carry weapons” in *District of Columbia v. Heller*, lower courts have been grappling with whether there is also a right to train with those weapons.<sup>1</sup> Courts have considered whether training is a protected activity, whether it is a “core” right, and whether its protection is limited to gaining the minimum competency needed for self-defense.<sup>2</sup>

The federal circuit courts are divided over these questions. The Seventh Circuit struck down a ban on shooting ranges within the city of Chicago because training restrictions are “close[] to implicating the core of the Second Amendment right.”<sup>3</sup> After Chicago revised its ban to allow shooting ranges in 2.2 percent of the city, the Seventh Circuit invalidated that regulation as well, along with a provision barring anyone under eighteen from entering a shooting range.<sup>4</sup> The Third Circuit, holding that a ban on center-fire rifle training likely violates the Second Amendment, stated that a training restriction burdens the Amendment’s core if it has the effect of depriving people of the “skills commonly used for lawful purposes like self-defense in their homes,” but suggested that such restrictions are rare.<sup>5</sup> The Second Circuit held that a law prohibiting New York City residents from taking handguns outside of the city—which contained only seven total ranges for its eight million residents—for training or shooting competitions “does not approach the core area of protection.”<sup>6</sup> After the Supreme Court granted certiorari, however, the City of New York opted to amend its law and moot the case rather than defend it before a less agreeable court.<sup>7</sup>

No court yet has explored the legal history of the right to train, nor has any article. This Article presents the first in-depth historical exploration of the right. It reveals that America’s Founders viewed the right to train as a pillar of the Second Amendment: it supports every aspect of the right, including self-defense, community defense, militia rights, and the prevention of tyranny. Moreover, the activity of training itself was cherished by the Founders. This history reveals that training is central to the right and deserving of robust Second Amendment protection.

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<sup>1</sup> 554 U.S. 570, 592 (2008).

<sup>2</sup> *Id.* at 630.

<sup>3</sup> *Ezell v. City of Chi.*, 651 F.3d 684, 708 (7th Cir. 2011) (*Ezell I*).

<sup>4</sup> *Ezell v. City of Chi.*, 846 F.3d 888, 890 (7th Cir. 2017) (*Ezell II*).

<sup>5</sup> *Drummond v. Robinson Twp.*, 9 F.4th 217, 229–30 (3d Cir. 2021).

<sup>6</sup> *N.Y. State Rifle & Pistol Ass’n v. City of New York*, 883 F.3d 45, 62 (2d Cir. 2018).

<sup>7</sup> *N.Y. State Rifle & Pistol Ass’n v. City of New York*, 140 S. Ct 1525, 1526 (2020).



Part I of this Article looks at English history. It explores the millennium leading up to America's founding in which England—through the hue and cry, posse comitatus, and militia—relied on an armed and trained populace for domestic tranquility and national security.

Part II analyzes the colonial era, in which arms proficiency was necessary for food, sport, and survival. Accurate shooting was required for everything, from procuring meat to conquest to self-defense and community defense. Further, because there was such an emphasis on marksmanship, shooting matches became a popular diversion. As a result of the colonists' habitual use of firearms, they became the most skillful shooters in the world.

During the Revolutionary War, discussed in Part III, the Americans' lifelong familiarity with arms provided them with a tremendous advantage over the British. Their superior marksmanship inspired confidence among the Patriots, terrified the British, and greatly contributed to their success on the battlefield. It is reasonable to suggest that the Americans would not have won their independence had the typical colonist not been accustomed to using arms all their lives.

The lessons of the Revolutionary War were fresh in the minds of the Founders when they ratified the Constitution and the Bill of Rights. Part IV delves into the debates during the ratification processes and finds that while the Federalists and Antifederalists disagreed over the need for a declaration of rights, everyone agreed that an armed and trained populace was necessary to prevent tyranny. Indeed, the Second Amendment's text expressly highlights the relationship between a trained society and a free state.

Part V reviews the restrictions on the right to train that existed in the colonial and founding eras. The few laws that restricted recreational shooting were either wartime measures enacted to conserve gunpowder or limitations on shooting at particular times and places. These laws were not intended to limit training, and some included exceptions to allow it.

Part VI analyzes modern cases. While courts generally recognize that there must be some sort of right to train, no court has explored the historical support for the right or the challenged restrictions.

This Article concludes by emphasizing that training is a pillar of the right to keep and bear arms because it is required to develop the skills necessary to effectively exercise the other protected rights, such as self-defense, hunting, and militia service. Given the historical foundation of the right to train, courts should ensure that it is robustly protected by the Second Amendment, as the Founders intended.

## I. ENGLISH HISTORY

In forming their government, Americans sought to both preserve cherished English liberties and expand them. As the Supreme Court explained, the Second

Amendment “codified a right ‘inherited from our English ancestors.’”<sup>8</sup> This is not to say that the American arms right is limited to the scope of the English arms right.<sup>9</sup> Rather, Americans were contemptuous of the limitations on the English right.<sup>10</sup> They secured a broader and more robust right, which encompassed their own arms tradition informed by their own experiences.<sup>11</sup> Yet even the relatively limited English right protected the right to train with arms.

#### *A. Devotion to Arms in Ancient England*

The English encouraged training throughout most of their history, starting in the earliest recorded times. The definitive English historian of the eighteenth century, David Hume, wrote of Britain’s first inhabitants in his monumental *History of England*.<sup>12</sup> Hume explained that their devotion to arms secured their liberty: “The Britons were divided into many small nations or tribes; and being a military people, whose sole property was their arms and their cattle, it was impossible, after, they had acquired a relish of liberty, for their princes or chieftains to establish any despotic authority over them.”<sup>13</sup> “Their governments,” Hume added, “though monarchical, were free.”<sup>14</sup>

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<sup>8</sup> District of Columbia v. Heller, 554 U.S. 570, 599 (2008) (quoting Robertson v. Baldwin, 165 U.S. 275, 281 (1897)).

<sup>9</sup> See Bridges v. California, 314 U.S. 252, 264 (1941) (“[T]o assume that English common law in this [First Amendment] field became ours is to deny the generally accepted historical belief that one of the objects of the Revolution was to get rid of the English common law on liberty of speech and of the press.”) (quotation omitted); *id.* (quoting VI THE WRITINGS OF JAMES MADISON, 1790–1802, at 387 (Gaillard Hunt ed., 1906) (“Madison . . . wrote that ‘the state of the press . . . under the common law, cannot . . . be the standard of its freedom in the United States.’”)).

<sup>10</sup> When James Madison introduced the Second Amendment in Congress, his notes show that he condemned the limited scope of the “English Decln. of Rts” including that it protected only “arms to Protestts” (Protestants). James Madison, Notes for Speech in Congress Supporting Amendments, June 8, 1789, in THE ORIGIN OF THE SECOND AMENDMENT: A DOCUMENTARY HISTORY OF THE BILL OF RIGHTS, 1787–1792, at 645 (David Young ed., 2d ed. 2001); see also THOMAS M. COOLEY, THE GENERAL PRINCIPLES OF CONSTITUTIONAL LAW IN THE UNITED STATES OF AMERICA 270 (1880) [hereinafter COOLEY, THE GENERAL PRINCIPLES OF CONSTITUTIONAL LAW] (The Second Amendment “was adopted with some modification and enlargement from the English Bill of Rights”).

<sup>11</sup> See Poe v. Ullman, 367 U.S. 497, 542 (1961) (Harlan, J., dissenting) (Justice John M. Harlan analyzing the “liberty of the individual” in America by looking to “what history teaches are the traditions from which it developed as well as the traditions from which it broke”).

<sup>12</sup> 1 DAVID HUME, THE HISTORY OF ENGLAND FROM THE INVASION OF JULIUS CÆSAR TO THE REVOLUTION IN 1688, at 3 (1775).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

Their devotion to arms paid off when Julius Caesar invaded Britain in 55 BC and the “common people” successfully repelled the Roman invasion.<sup>15</sup> When Caesar launched another campaign the following year, the British resisted the conquest for nearly a century, until largely being subdued in AD 43.<sup>16</sup>

Once the British were under Roman control, the Romans established a Field of Mars in London, where the “Romans train’d up and exercised their Young Souldiers, and likewise the Youth of the Neighbouring Britains, in the skill and exercise of Arms, that they might be more expert in the use of them upon all emergent Occasions.”<sup>17</sup> The purpose was to ensure that “if any sudden Tumults or Insurrections should happen in the City,” the British “were then ready and at hand to suppress them.”<sup>18</sup>

Over time, however, the British developed too great a dependency on the Romans. When Rome began neglecting Britain to focus on its own teetering empire, Britain lacked the capability to defend itself.<sup>19</sup> It was not long before Britain learned the consequences of an unarmed and untrained populace, as it was repeatedly invaded by enemies and left pleading for Rome’s assistance.<sup>20</sup> Tired of coming to Britain’s aid, the Romans around 448 AD “informed the Britains that they must no longer look to them for succour, exhorted them to arm in their own defence, and urged, that as they were now their masters, it became them to protect by their valour that independence which their antient lords had conferred upon them.”<sup>21</sup>

#### *B. Dependence on a Trained Populace for Domestic Order and National Security*

Having reaped the benefits of a trained populace and suffered the consequences of an untrained populace, English laws soon began requiring arms possession and competency.<sup>22</sup> Jurist Nathaniel Bacon (Francis Bacon’s half-brother) wrote in the seventeenth century about the rights of Englishmen under the ancient laws of England.<sup>23</sup> Bacon noted that historically the “strength” of the nation was “the

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<sup>15</sup> See JULIUS CAESAR, THE CONQUEST OF GAUL 100 (S.A. Handford ed., 1951) (1982 reprint).

<sup>16</sup> HUME, *supra* note 12, at 6. Some tribes “maintained an obstinate resistance,” but most were defeated by Publius Ostorius Scapula in AD 51, and the rest were conquered by Gnaeus Julius Agricola in the early 80s. *Id.* at 6–8.

<sup>17</sup> John Bagford, A Letter to the Publisher, in 1 JOHN LELAND, ANTIQUARI DE REBUS BRITANNICIS COLLECTANEA LXI (1715). Leland (1503–1552) has been called the “father of [England’s] local history and bibliography.” Archibald L. Clarke, *John Leland and King Henry VIII*, in 2 THE LIBRARY 145 (J.Y.W. MacAlister & Alfred W. Pollard eds., 3d. ser., 1911).

<sup>18</sup> Bagford, *supra* note 17, at LXI.

<sup>19</sup> HUME, *supra* note 12, at 9.

<sup>20</sup> *Id.* at 10.

<sup>21</sup> *Id.* at 11.

<sup>22</sup> See generally HUME, *supra* note 12.

<sup>23</sup> William Pitt the Elder called Bacon’s work “without exception, the best and most instructive book we have on matters of that kind.” Letter from William Pitt to Thomas Pitt,

Freemen . . . bound to keep Arms for the preservation of the Kingdom, their Lords, and their own persons,” who were “strict in their Discipline”—i.e., training—with arms.<sup>24</sup>

Part of what freemen were “bound” to do was join the “hue and cry” to pursue and apprehend criminals.<sup>25</sup> *The Mirrour of Justices* noted that historically in England, “[i]t was [o]rdained; [t]hat every one of the age of fourteene yeares and above should be ready to kill mortall offenders in their notorious sinnes, or to follow them from [t]owne to [t]owne with [h]ue and [c]ry.”<sup>26</sup> It must have been expected that everyone over thirteen would be trained to arms because they could not otherwise “be ready to kill mortall offenders.”<sup>27</sup> Indeed, the entire community of people over thirteen years old chasing criminals with deadly weapons and “ready to kill” would often be more dangerous than allowing criminals to flee, unless the community were disciplined in arms.<sup>28</sup>

A related and likewise ancient law-enforcement scheme that required an armed and competent populace was the posse comitatus. When sheriffs needed assistance catching criminals, suppressing riots, or enforcing civil process, they had the authority to summon armed members of the community for help.<sup>29</sup> “The attack of a castle or place of arms must require disciplined troops,” Granville Sharp explained at the time of America’s founding, “therefore it was certainly necessary that ‘every man’ so bound by the common law to assist” in the posse comitatus “should be trained in arms.”<sup>30</sup>

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May 4, 1754, in *LETTERS WRITTEN BY THE LATE EARL OF CHATHAM TO HIS NEPHEW THOMAS PITT, ESQ. (AFTERWARDS LORD CAMELFORD)* 38–39 (3d ed. 1804).

<sup>24</sup> NATHANIEL BACON, *THE CONTINUATION OF AN HISTORICALL DISCOURSE OF THE GOVERNMENT OF ENGLAND, UNTILL THE END OF THE REGIME OF QUEENE ELIZABETH* 40 (1651).

<sup>25</sup> There is yet another species of arrest, wherein both officers and private men are concerned, and that is upon an *hue and cry* raised upon a felony committed. An hue (from *huer*, to shout) and cry, *hutesium et clamor*, is the old common law process of pursuing, with horn and with voice, all felons, and such as have dangerously wounded another. It is also mentioned by statute Westm. 1. 3 Edw. I. c. 9. and 4 Edw. I. *de officio coronatoris*. But the principal statute, relative to this matter, is that of Winchester, 13 Edw. I. c. 1 & 4. which directs, that from thenceforth every country shall be so well kept, that, immediately upon robberies and felonies committed, fresh suit shall be made from town to town, and from county to county. . . .

4 WILLIAM BLACKSTONE, *COMMENTARIES ON THE LAWS OF ENGLAND* (1769), reprinted in *CLASSICS OF ENGLISH LEGAL HISTORY IN THE MODERN ERA* 293 (David S. Berkowitz & Samuel E. Thorne eds., 1978).

<sup>26</sup> ANDREW HORNE, *THE MIRROUR OF JUSTICES* 10 (W. H. trans., 1646). See also Nicholas Tindal, in an opinion as the Chief Justice of Common Pleas, called *The Mirrour of Justices* “a book of great authority.” 133 ENG. REP. (11 COMMON PLEAS) 94 (1913).

<sup>27</sup> HORNE, *supra* note 26, at 10.

<sup>28</sup> *Id.*

<sup>29</sup> See BLACKSTONE, *supra* note 25, at 146.

<sup>30</sup> GRANVILLE SHARP, *TRACTS, CONCERNING THE ANCIENT AND ONLY TRUE MEANS OF*

When King Alfred established England's militia during his reign from 871–899, he created an even greater need for the people to be expert in arms.<sup>31</sup> The militia required armed members of the community to defend the country against invasions and insurrections.<sup>32</sup> It “was founded on the idea that all the freemen were to be armed, trained, and ready to fight to defend their local and national communities.”<sup>33</sup>

Through the hue and cry, posse comitatus, and militia, England's domestic order and natural security historically depended on a significant portion of the population being proficient in arms. It was therefore common throughout England's history to train the people with arms, starting from their youth.

With arms proficiency being so vital to the nation's security, it is no wonder that England has an extensive tradition of training mandates. Such mandates existed since at least 1363, when King Edward III sent letters to London sheriffs mandating “that every citizen, at leisure times and holidays, use in their recreations Bows and Arrows, or Pellets, or Bolts, . . . and learn the art of shooting.”<sup>34</sup> A similar 1368 proclamation ensured that “every one of the said city, strong in body . . . learn and exercise the art of shooting.”<sup>35</sup> Londoners who opted to “apply themselves to the throwing of stones, wood, iron, hand-ball, foot-ball, bandy-ball, cambuck or cock-fighting” instead of shooting faced imprisonment.<sup>36</sup>

Edward's successor, King Richard II, similarly mandated shooting while forbidding less-worthy hobbies. A 1388 law required that “Servants and Labourers shall have Bows and Arrows, and use the same the Sundays and Holydays, and leave all playing at Tennis or Football, and other Games called Coits, Dice, Casting of Stone, and other such importune Games.”<sup>37</sup> Mindless games apparently continued to distract the population over the next couple decades, so the 1388 law was restated

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NATIONAL DEFENCE, BY A FREE MILITIA 23 (3d ed. 1782) (quoting EDWARD COKE, THE SECOND PART OF THE INSTITUTES OF THE LAWE OF ENGLAND 193 (1642) (“every man is bound by the Common Law to assist not only the Sherife in his Office for the execution of the Kings Writs (which are the commandments of the King) according to Law; but also his Baily, that hath the Sheriffes Warrant in that behalfe, hath the same authority.”)); *see also* WILLIAM JONES, AN INQUIRY INTO THE LEGAL MODE OF SUPPRESSING RIOTS WITH A CONSTITUTIONAL PLAN OF FUTURE DEFENCE 19 (2d ed. 1782) (stressing that “all persons, who constitute the power of a county” must be “bound to be competently skilled in the use of [the musket and bayonet]”).

<sup>31</sup> David B. Kopel, *The Posse Comitatus and the Office of Sheriff: Armed Citizens Summoned to the Aid of Law Enforcement*, 104 J. CRIM. L. & CRIMINOLOGY 761, 771 (2015).

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> WALTER MICHAEL MOSELEY, AN ESSAY ON ARCHERY: DESCRIBING THE PRACTICE OF THAT ART, IN ALL AGES AND NATIONS 294 (1792). “Bolts were the Arrows used for Cross-bows.” *Id.*

<sup>35</sup> 1 JOHN ENTICK, A NEW AND ACCURATE SURVEY OF LONDON, WESTMINSTER, SOUTHWARK, AND PLACES ADJACENT 261 (1766).

<sup>36</sup> *Id.*

<sup>37</sup> 12 Ric. II ch. 6 (1388) (brackets omitted).

in 1409 with the assurance that the said statute will “be firmly holden and kept.”<sup>38</sup> The 1409 act punished “every such Labourer or Servant that doth contrary to the same Statute” with “Imprisonment by Six Days.”<sup>39</sup> And if the law was not enforced, the local official responsible for enforcement was fined.<sup>40</sup>

Nearly a century later, a 1477 law under King Edward IV provided that “no Person should use any unlawful Games, as Dice, Coits, Tennis, and such like Games, but that every Person strong and able of Body should use his Bow.”<sup>41</sup> This law must have been effective, because in 1511, *An Act Concerning Shooting in Long Bowes* recognized the increasing number of “good Archers” due to the regular “exercise of the Subgiettes” in the “shotyng in long bowes.”<sup>42</sup> It credited the improvement in archery for having successfully “defended this Realme” against “the cruell malice and daunger” of England’s enemies.<sup>43</sup> But it also lamented a recent decline in “[a]rcherie and shotyng in longbowes” due to the increasing popularity of other games and hobbies.<sup>44</sup> The act, therefore, required that every able-bodied subject under 60 years old “use and exercise shotyng in longbowes” and keep “a bowe and arrowes” at home, ready for defensive use at all times.<sup>45</sup> Additionally, fathers were required to provide their sons, and masters were required to provide their servants, with archery equipment and training.<sup>46</sup> By applying to nearly everyone under sixty, this law was significantly broader than the fourteenth-century laws that applied only to laborers and servants.<sup>47</sup>

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<sup>38</sup> 11 Hen. IV ch. 3–6 (1409).

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> 17 Edw. IV ch. 3 (1477).

<sup>42</sup> 3 Hen. VIII ch. 3 (1511).

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> [L]ocal records suggest that towns took seriously the need to make provision for their inhabitants to practise archery. Lydd in Kent can be found making butts periodically from the 1420s to the 1480s, and by the last decades of the fifteenth century Coventry, New Romney, Plymouth, Rye and Walberswick were all doing the same. The fuller records of the mid sixteenth century sometimes present a more detailed picture. At Bristol half a dozen men or more worked for the best part of a week or even longer to construct butts in the town marsh most years between 1540 and 1557. . . . At Ludlow a team half the size worked for two or three days to construct butts behind the castle most years between 1538 and 1570. . . . Between the 1530s and the 1560s Barnstaple, Dover, Exeter, Eye, Faversham, Leicester, Lyme Regis, Poole, Reading, Southampton, Warwick, Winchester, Windsor, Worcester and no doubt many other towns made similar efforts to keep their butts in good repair.

Steven Gunn, *Archery Practice in Early Tudor England*, 209 PAST & PRESENT 53, 55 (2010).



A similar law, enacted three years later, required all able-bodied subjects to always keep bows and arrows ready at home, practice with them regularly, and if responsible for a young male, to equip and train them.<sup>48</sup> This act stated that it would apply in perpetuity.<sup>49</sup> Additionally, several proclamations issued under Henry VIII during this time ordered local officials to ensure that people were engaging in archery rather than the forbidden games that took attention away from it.<sup>50</sup>

Likely resulting from the growing popularity of firearms in the sixteenth century, a firearms training law was passed along with a longbow training law in 1541.<sup>51</sup> The longbow training law again lamented that “Several new devised Games” had caused “the Decay of Archery,” and required that “every man” under sixty “use and exercise shooting in long-bows,” while keeping a bow “continually in his house” to “use himself in shooting.”<sup>52</sup> Everyone had to “exercise themselves with long-bows . . . in holy days and other times convenient.”<sup>53</sup> Also similar to previous laws, the “fathers, governors and rulers of such as be of tender age” were required to “teach and bring them up in the knowledge of the same shooting” and provide them with arms to practice with.<sup>54</sup> The firearms training law allowed “all Gentlemen, Yeomen, and Servingmen,” as well as “all the Inhabitants of Citties, Coroughes and Markett

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Some towns made the effort to build ditches or rails around the butts, while others hired painters to decorate them. *Id.* at 57.

<sup>48</sup> 6 Hen. VIII ch. 2 (1514).

<sup>49</sup> *Id.*

<sup>50</sup> 1 TUDOR ROYAL PROCLAMATIONS, nos. 108, 121, 138, 163, 183 (Paul L. Hughes & James F. Larkin eds., 1964–69).

<sup>51</sup> The popularity of handguns and crossbows had long been blamed for taking away from longbow practice. For example, Henry VIII’s 1528 proclamation blamed “the newfangles and wanton pleasure that men now have in using of crossbows and handguns” for the declining interest in longbows. *Id.* at no. 121. As a result, some laws restricted the possession and use of crossbows and handguns for certain classes in part to encourage longbow proficiency. *See, e.g.*, 19 Hen. VII, ch. 4 (1503) (limiting crossbows); 3 Hen. VIII ch. 13 (1511) (limiting crossbows); 6 Hen. VIII ch. 13 (1514) (limiting crossbows); 25 Hen. VIII ch. 17 (1533) (limiting crossbows and handguns). Handguns grew in popularity anyway, as the 1541 law reflects. *See* 6 Hen. VIII ch. 13 (1514).

<sup>52</sup> 33 Hen. VIII ch. 9 (1541), *in* 5 THE STATUTES AT LARGE, FROM THE THIRTY-SECOND YEAR OF KING HENRY VIII. TO THE SEVENTH YEAR OF KING EDWARD VI. INCLUSIVE 81 (Danby Pickering ed., 1763).

<sup>53</sup> *Id.* at 82.

<sup>54</sup> *Id.* at 81. For examples of enforcement of the longbow training law, see Gunn, *supra* note 47, at 58–59 (finding evidence of 176 individuals in Ludlow being charged for failing to train from 1542–1576 and 72 individuals being charged in Fordwich between 1553–1569); LOIS G. SCHWOERER, GUN CULTURE IN EARLY MODERN ENGLAND 55 (2016) (finding that 59 individuals in Essex were charged from 1573–1574; that Peterborough residents were fined for failing to train while Peterborough constables were fined for failing to enforce the training requirement; and that “leaders in Buckinghamshire, Derbyshire, Essex, Oxfordshire, Warwickshire, and Wiltshire were cooperative and took steps to comply” with the training requirement).

Townes” to “shote with any handgune Demyhake or hagbutt at anye butt or bank of Earth onlye in place convenient for the same.”<sup>55</sup>

In addition, there was regular militia training. As of 1581, depending on where one lived throughout the realm, the populace was summoned for arms training in times of peace anywhere from one to sixteen times per year.<sup>56</sup> The following decade, Queen Elizabeth commanded that her subjects be armed and ready to defend the country in an address to both Houses of Parliament: “You that be lieutenants and gentlemen of command in your counties, I require you to take care that the people be well armed, and in readiness upon all occasions.”<sup>57</sup> The emphasis on training continued under Charles II, as a 1662 law required that the militia train up to four times per year (for up to two days at a time) in addition to one general muster per year (which lasted up to four days).<sup>58</sup>

It was not until the late seventeenth century that England established a standing army, and not until the nineteenth century that England established a professional police force.<sup>59</sup> Throughout the overwhelming majority of its history, the country relied on its armed populace for domestic order and national security.

### *C. Legal Commentaries on the Right to Train*

Influential legal commentators long recognized the importance of England’s trained populace. Sir John Fortescue, the Chief Justice of the King’s Bench, wrote two influential treatises around 1470.<sup>60</sup> In *The Difference Between an Absolute and a Limited Monarchy*, Fortescue contrasted the unarmed and untrained French with the armed and proficient English. The French peasants were “not able to fight, nor to defende the realme; nor thai haue wepen, nor money to bie thaim wepen.”<sup>61</sup> In England, on the other hand, where the people were expert in arms, the country could better defend itself.<sup>62</sup> In *De Laudibus Legum Angliæ*, Fortescue advocated for a trained populace and, to that end, starting training at a young age. “[W]hat is or can

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<sup>55</sup> 33 Hen. VIII ch. 6 (1541).

<sup>56</sup> 2 WILLIAM LAMBARD, EIRENARCHA OR OF THE OFFICE OF THE JUSTICES OF PEACE, IN TWO BOOKES 479 (1581) (reprinted by The Lawbook Exchange, Ltd. in 2003).

<sup>57</sup> A Speech Made by Queen Elizabeth in Parliament Concerning the Spanish Invasion (1593), in 1 THE HARLEIAN MISCELLANY: A COLLECTION OF SCARCE, CURIOUS, AND ENTERTAINING PAMPHLETS AND TRACTS, AS WELL IN MANUSCRIPT AS IN PRINT 437 (1808).

<sup>58</sup> 14 Car. II ch. 3 (1662).

<sup>59</sup> JOYCE LEE MALCOLM, TO KEEP AND BEAR ARMS: THE ORIGINS OF AN ANGLO-AMERICAN RIGHT 2 (1994).

<sup>60</sup> WALTER RALEIGH, THE HISTORIE OF THE WORLD, IN FIVE BOOKES 247 (1614) (Sir Walter Raleigh called Fortescue “that notable Bulwarke of our Lawes”).

<sup>61</sup> JOHN FORTESCUE, THE GOVERNANCE OF ENGLAND: THE DIFFERENCE BETWEEN AN ABSOLUTE AND A LIMITED MONARCHY 114 (Charles Plummer ed., rev. ed. 1885).

<sup>62</sup> *Id.*



be of greater Use to a Minor,” he questioned, “than to be trained up in Military Discipline, whilst he is yet a Minor?”<sup>63</sup> “Indeed,” Fortescue asserted, “it will be of no small Advantage to the Kingdom, that the Inhabitants be expert in Arms.”<sup>64</sup> John Selden—“England’s first legal historian”<sup>65</sup>—added notes to the edition he edited and published in 1616. Demonstrating that arms training remained common practice during the century-and-a-half after Fortescue wrote *De Laudibus Legum Angliæ*, Selden stated that “[t]he Custom of the Nation has been to train up the Freeholders to Discipline.”<sup>66</sup>

#### *D. Shooting Competitions as Practice and Entertainment*

Frequent practice and the demand for marksmanship inevitably led to the popularity of shooting competitions. By the thirteenth century, shooting matches “were an integral part of the social scene in Europe and elsewhere.”<sup>67</sup> By the end of the fifteenth century, archery practice had become so common that “all the gardens” in London were converted into “a plaine field, for Archers to shoot in.”<sup>68</sup> When population growth in Islington, Hoxton, and Shoreditch led to the closure of areas traditionally used for training in 1514, “a furious contest” erupted, “amounting . . . to an insurrection,” “in which the citizens practising archery, tenacious of what they had long enjoyed as a right, assembled and destroyed all the fences” obstructing their old training grounds.<sup>69</sup> The archers who removed the barriers and restored the training grounds numbered in the thousands.<sup>70</sup>

The typical shooting practice was a social activity, with practices often involving over a dozen participants and sometimes even more spectators.<sup>71</sup> Shooting competitions could be major events. As Steven Gunn explained:

The duty to practise archery for the sake of king and kingdom was often lightened by the excitement of competition, as at Canterbury, Chester, Great Dunmow and Shrewsbury, at the

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<sup>63</sup> JOHN FORTESCUE, *DE LAUDIBUS LEGUM ANGLIÆ* 100 (John Selden ed., 2d ed. 1741).

<sup>64</sup> *Id.* at 100–01.

<sup>65</sup> Martha A. Ziskind, *John Selden: Criticism and Affirmation of the Common Law Tradition*, 19 AM. J. LEGAL HIST. 22, 22 (1975).

<sup>66</sup> FORTESCUE, *supra* note 63, at 101.

<sup>67</sup> M.L. BROWN, *FIREARMS IN COLONIAL AMERICA: THE IMPACT ON HISTORY AND TECHNOLOGY 1492–1792*, at 28 (1980).

<sup>68</sup> RICHARD BAKER, *CHRONICLE OF THE KINGS OF ENGLAND FROM THE TIME OF THE ROMANS GOVERNMENT UNTO THE RAIGNE OF OUR SOVERAIGNE LORD KING CHARLES 159* (1643).

<sup>69</sup> ANTHONY HIGHMORE, *THE HISTORY OF THE HONOURABLE ARTILLERY COMPANY OF THE CITY OF LONDON, FROM ITS EARLIEST ANNALS TO THE PEACE OF 1802*, at 40 (1804).

<sup>70</sup> William Hunt, *Civic Chivalry and the English Civil War*, in *THE TRANSMISSION OF CULTURE IN EARLY MODERN EUROPE* 204, 215 (Anthony Grafton & Ann Blair eds., 1990).

<sup>71</sup> Gunn, note 47, at 56, 61.

Whit Monday games at Burrough on the Hill in Leicestershire and the wrestling and shooting contests with graded prizes linked to Bartholomew Fair in London.<sup>72</sup>

Gunn also identified shooting matches held between communities: “The Scotts of nearby Scot’s Hall and their men came to shoot at New Romney in 1506–7, Lord Powis and his men came to shoot at Shrewsbury in 1522–3, and Yorkshire gentlemen held a shooting match at York in 1555.”<sup>73</sup>

Archers of the era were highly skilled. “[M]any of them are recorded as shooting at twelve-score pricks or even thirteen-score pricks, targets set 240 or 260 paces away, comparable to the 250–300 yards reckoned as extreme bow range in the Hundred Years War.”<sup>74</sup> Firearms became common in shooting competitions in the fifteenth century, and gunners were also skilled.<sup>75</sup> A 1487 match hosted in Germany was held at a distance of 200 meters (nearly 219 yards), an impressive range for the rudimentary firearms of the time.<sup>76</sup>

In 1537, King Henry VIII incorporated by royal charter the Honourable Artillery Company.<sup>77</sup> The Company originated around 1087 “as a society of armed citizens for the protection of the goods of merchants.”<sup>78</sup> Henry VIII granted the royal charter “to promote regular practice in shooting the longbow, crossbow, and the handgun.”<sup>79</sup> The plan was successful, as interest in marksmanship increased and men vied for acceptance into the Company.

By the seventeenth century, however, enthusiasm for the Company waned—perhaps because London was facing no threat of invasion or because those most passionate about arms training were serving in Ireland.<sup>80</sup> Consequently, in 1610, inspired by ruined European cities that neglected training during peacetime, a group of private citizens revived the weekly training sessions at the Company’s Artillery Garden.<sup>81</sup> The effort to reinvigorate training was effective. Writing about 1638 in 1804, Anthony Highmore noted that becoming “great proficient in the use and exercise of arms” was “esteemed the most laudable exercise of diversion in use

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<sup>72</sup> *Id.* at 64.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.* at 68.

<sup>75</sup> BROWN, note 67, at 28. Firearm competitions were typically held separate from archery competitions due to the superiority of firearms, and rifle competitions were typically held separate from competitions for smoothbore firearms based on the superiority of rifles. *Id.*

<sup>76</sup> *Id.* Historian Lois Schwoerer notes that while “gorgeous guns” were sometimes used as a “status symbol,” those “used in hunting, target shooting, and for protection were usually simple and unadorned.” SCHWOERER, *supra* note 54, at 7.

<sup>77</sup> Hunt, *supra* note 70, at 214.

<sup>78</sup> RALPH NEVILL, BRITISH MILITARY PRINTS xxxiv (1909).

<sup>79</sup> SCHWOERER, *supra* note 54, at 97.

<sup>80</sup> Hunt, *supra* note 70, at 216.

<sup>81</sup> *Id.* at 213.

amongst the citizens of London.”<sup>82</sup> Shooting was pursued with similar zeal in the eighteenth century, when “visit[ing] shooting galleries in London as well as other places for target practice” was all the “rage.”<sup>83</sup>

Notably, recreational shooting was an activity in which everyone could participate, including children. In the 1540s, shooting games held in Essex included a bracket for “lads.”<sup>84</sup> In his poem *The Artillery Garden*, Thomas Dekker refers to a “muster made by children,” in which “Every boy-man in his infantry, [is] Shewing like Mars in his minority.”<sup>85</sup> Similarly, Benjamin Johnson hoped in a seventeenth-century poem that “our great men would let their Sonnes Come to their Schooles” so instructors could “show’ hem the use of Guns.”<sup>86</sup>

Roger Ascham argued that “euerye bodye shoulde learne to shote when they be yonge,” because men can only learn to shoot well if “they learne it perfitelye when they be boyes.”<sup>87</sup> In his very influential *The Scholemaster* published in 1570, Ascham advised boys to learn to shoot firearms and bows in childhood. “[T]o plaie at all weapones” and “to shote faire in bow, or surelie in gon” were “verie necessarie” skills “for a Courtlie Gentleman.”<sup>88</sup> Similarly, John Milton’s 1644 treatise *Of Education* advocated for students to practice daily with their arms.<sup>89</sup> Some schools included arms training in their curriculums. For example, at the Lincoln Grammar School in the 1620s, “an old low-country souldier was entertain’d to traine them [the students] in arms, and they all bought themselves weapons, and instead of childish sports, when they were not at their bookes, [they] were exercis’d in all their military postures, and in assaults and defences.”<sup>90</sup> Likewise, the free grammar school at Chip-ping Campden in Gloucestershire “legitimated firearms in the minds of young boys” by “[i]ncluding guns in their educational program” by 1639.<sup>91</sup> A 1615 augmented edition of John Stow’s *Annals of London* noted that “the young Schollers, and other youthes, from the age of nine or ten yeares unto seaventeene” voluntarily “practised all points of warre, which they had seene their elders teach, having made them pikes

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<sup>82</sup> HIGHMORE, *supra* note 69, at 64.

<sup>83</sup> SCHWOERER, *supra* note 54, at 113. Schwoerer adds that throughout the centuries, the popularity of guns for marksmanship and other civilian activities “helped to maintain a market for firearms and employment in the gun industry in peacetime.” *Id.* at 26.

<sup>84</sup> Gunn, *supra* note 47, at 61.

<sup>85</sup> Hunt, *supra* note 70, at 219 (quoting THOMAS DEKKER, *THE ARTILLERY GARDEN*).

<sup>86</sup> 2 *THE WORKES OF BENJAMIN JOHNSON* 215 (1640).

<sup>87</sup> ROGER ASCHAM, *TOXOPHILUS* 36 (Edward Arber ed., 1868) (1545). Ascham added that “shotinge of all pastymes is moost fitte to be vsed in childhode: bycause it is an imitation of moost ernest thinges to be done in manhode.” *Id.*

<sup>88</sup> ROGER ASCHAM, *THE SCHOLEMASTER* 64 (1571). “The record of reprints of Roger Acham’s *The Scholemaster*—four between 1571 and 1589, and another one in 1711—shows its popularity.” SCHWOERER, *supra* note 54, at 147.

<sup>89</sup> JOHN MILTON, *OF EDUCATION* 6–7 (1644).

<sup>90</sup> LUCY HUTCHINSON, *MEMOIRS OF THE LIFE OF COLONEL HUTCHINSON* 32 (7th ed. 1848).

<sup>91</sup> SCHWOERER, *supra* note 54, at 147; *see also* Hunt, *supra* note 70, at 220.

and pieces fit for their weake handling.”<sup>92</sup> Meanwhile, a 1622 sermon commended the Artillery Garden and Military Yard companies for training London’s “valiant men” as well as “youths, nay very children in feats of arms.”<sup>93</sup>

When seventeenth-century kings visited places, the local men would often train to impress them.<sup>94</sup> Sometimes, to the kings’ delight, the children would also join.<sup>95</sup> Sir John Oglander wrote that when King James I visited the Isle of Wight in 1607, “hee wase mutch taken with seeing the littel [boys] skirmishe, whoe he loved to see betor and willynglior then menn.”<sup>96</sup> Sir Oglander observed that the “[b]oys were drilled in martial exercises in other places as well as in the Island, and their performances pleased Charles I as much as they did his father [James].”<sup>97</sup> Indeed, King Charles I was “gratified by witnessing the proficiency of ‘certain boys’ in the use of arms” on the Island in 1627, and even granted their request for gunpowder “in the hope that the youths of other places would be stirred up to do the same.”<sup>98</sup>

*E. The Understanding of the English Right at the Time of the Second Amendment’s Ratification*

In interpreting the United States Constitution, the analytical baseline for English history is how America’s Founders understood it. What mattered most in *Heller*, for example, is that “[b]y the time of the founding, the right to have arms had become fundamental for English subjects.”<sup>99</sup>

At the time of America’s founding, training was revered as both a right and a duty in England. It had long been held as essential to self-preservation. Highmore articulated the view held by generations of his countrymen when he said that “the laws of nature [and] of sound policy require every active citizen to be exercised, and expert in arms of defence and peace for mutual protection.”<sup>100</sup> “The ancient power of the country,” he added, “is established upon th[e] security” of a trained citizenry.<sup>101</sup> Indeed, England had depended on an armed and trained populace for domestic tranquility and national security for over a millennium. England’s 1541 training requirements were still in effect.<sup>102</sup> Shooting competitions were a favorite pursuit. And to many—especially the Americans who just battled Britain in a long

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<sup>92</sup> JOHN STOW, *ANNALES, OR A GENERALL CHRONICLE OF ENGLAND* 936 (Edmund Howes ed., 1615).

<sup>93</sup> Hunt, *supra* note 70, at 219.

<sup>94</sup> JOHN OGLANDER, *THE OGLANDER MEMOIRS* 121 (W.H. Long ed., 1888).

<sup>95</sup> *Id.*

<sup>96</sup> *Id.*

<sup>97</sup> *Id.* at 121 n.2.

<sup>98</sup> *Id.*

<sup>99</sup> *District of Columbia v. Heller*, 554 U.S. 570, 593 (2008).

<sup>100</sup> HIGHMORE, *supra* note 69, at 4.

<sup>101</sup> *Id.*

<sup>102</sup> SHARP, *supra* note 30, at 16.

and grueling war—Britain’s large standing army created an even greater need for a trained populace. As Granville Sharp put it:

If it be alledged that there can be no occasion, in these modern times, to arm and train the inhabitants of England, because there is an ample military force, or *standing army*, to preserve the peace; yet let it be remembered, that, the greater and more powerful *the standing army is*, so much more necessary is it that there *should be a proper balance to that power*, to prevent any ill effects from it: though there is one bad effect, which *the balance* (howsoever perfect and excellent) cannot prevent.<sup>103</sup>

In sum, as Sharp declared at the time of America’s founding, “the laws of England always required the people to be armed, and not only to be *armed*, but to be *expert in arms*.”<sup>104</sup>

## II. COLONIAL AMERICA

### *A. The Importance of Marksmanship for Food and Survival*

In colonial America, arms proficiency was required for survival. Guns were needed for food, self-defense, community defense, and conquest. Poor shooting, therefore, had deadly consequences.<sup>105</sup> It could result in starvation, invasion, insurrection, or defeat in battle.

Great emphasis was placed on proficiency from the earliest colonial days. “Nowhere else was the cult of accuracy so rigorously worshipped as in colonial America.”<sup>106</sup> The colonists practiced shooting regularly, and since they depended on one another for security, they passed laws to ensure that the community as a whole was competent with arms.<sup>107</sup>

In 1629, so the community “may bee the better able to resist both forraigne enemies & the natives,” the governor of Massachusetts Bay asked that the people “bee exercised in the use of armes.”<sup>108</sup> In 1645, the colony ensured that its youth

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<sup>103</sup> *Id.* at 26.

<sup>104</sup> *Id.* at 18.

<sup>105</sup> “Everywhere the gun was more abundant than the tool. It furnished daily food; it maintained its owner’s claims to the possession of his homestead among the aboriginal owners of the soil; it helped to win the mother country’s wars for possession of the country as a whole.” 1 CHARLES WINTHROP SAWYER, FIREARMS IN AMERICAN HISTORY 1 (1910).

<sup>106</sup> ALEXANDER ROSE, AMERICAN RIFLE: A BIOGRAPHY 18–19 (2008).

<sup>107</sup> See David B. Kopel & Joseph G.S. Greenlee, *The Second Amendment Rights of Young Adults*, 43 S. ILL. U. L.J. 495, 533–89 (2019).

<sup>108</sup> 1 RECORDS OF MASSACHUSETTS, 1628–1641, at 392 (Nathaniel B. Shurtleff ed., 1853).

knew how to shoot, too. Determining that “the training up of youth to the art and practice of arms will be of great use in the country in divers respects,” it ordered “that all youth within this jurisdiction, from ten years old to the age of sixteen years, shall be instructed . . . in the exercise of arms,” including “small guns, half-pikes, bows and arrows, &c.”<sup>109</sup> Starting in 1656, Plymouth Colony required its militiamen to bear arms to church on Sundays “with powder and bullett to improve if occation shall require”—i.e., practice shooting after church when necessary.<sup>110</sup>

The most common laws ensuring arms proficiency were militia laws.<sup>111</sup> The American colonies enacted hundreds of militia laws that required virtually all able-bodied males (most often defined as those aged sixteen to sixty) to keep arms for service in the militia.<sup>112</sup> Virtually all such laws required those militiamen to train with said arms.<sup>113</sup> In a 1744 speech, for example, New Jersey’s governor proclaimed that “the Militia, in this Country . . . [is] the whole Body of the People from Sixteen Years of Age to Fifty. It is fit that all these People should be trained and taught the Use of Arms, and it is chiefly for this that the Militia Act is intended.”<sup>114</sup> Since the colonies were entirely dependent on a trained militia for their defense, and because the militia consisted of the body of the people, the colonies depended on the people being trained in arms.<sup>115</sup> Militia laws were therefore intended to ensure that the populace possessed arms and could use them effectively.

Most colonists did not need mandates to maintain arms proficiency. As Robert Beverley wrote of Virginians in 1705, “most people there are skilful in the use of fire-arms, being all their lives accustomed to shoot in the woods.”<sup>116</sup> It was this habitual practice of using guns in their daily lives, “together with a little exercising,” that Beverley thought “would soon make the militia useful.”<sup>117</sup>

Joseph Doddridge’s writings reveal that little changed throughout the eighteenth century. Writing of the typical Virginian and Pennsylvanian during the 1760s, 70s,

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<sup>109</sup> THE CHARTERS AND GENERAL LAWS OF THE COLONY AND PROVINCE OF MASSACHUSETTS BAY 734 (1814).

<sup>110</sup> WILLIAM BRIGHAM, THE COMPACT WITH THE CHARTER AND LAWS OF THE COLONY OF NEW PLYMOUTH 102 (1836).

<sup>111</sup> The Supreme Court has noted the American militia system’s roots in King Alfred’s inventions. *See* *United States v. Miller*, 307 U.S. 174, 179 (1939) (“Blackstone’s Commentaries, Vol. 2, Ch. 13, p. 409 points out ‘that king Alfred first settled a national militia in this kingdom’ and traces the subsequent development and use of such forces.”).

<sup>112</sup> *See* Kopel & Greenlee, *supra* note 107, at 533–89 (covering the 13 original states and colonies, Vermont, and Plymouth Colony).

<sup>113</sup> *Id.*

<sup>114</sup> 6 DOCUMENTS RELATING TO THE COLONIAL HISTORY OF THE STATE OF NEW JERSEY, 1738–1747, at 187 (William A. Whitehead ed., 1882).

<sup>115</sup> The New Jersey Council described the militia as “the only Means in [the people’s] Power of preserving themselves, their Wives, their Children, and their Fortunes.” *Id.* at 227.

<sup>116</sup> ROBERT BEVERLEY, THE HISTORY AND PRESENT STATE OF VIRGINIA 217 (J.W. Randolph ed., 1855).

<sup>117</sup> *Id.*



and 80s, Doddridge noted that “[a] well grown boy, at the age of twelve or thirteen years, was furnished with a small rifle and shot pouch.”<sup>118</sup> It was not government mandates but recreational shooting that developed expertise: “Hunting squirrels, turkeys, and raccoons soon made him expert in the use of his gun.”<sup>119</sup>

*B. Shooting Competitions as Practice and Entertainment*

Discussing the adults, Doddridge noted that shooting contests, as in England, were popular in America: “Shooting at marks was a common diversion among the men, when their stock of ammunition would allow it.”<sup>120</sup> He explained their technique and tendency to shoot at long ranges:

Their shooting was from a rest, and at a great distance as the length and weight of the barrel of the gun would throw a ball on a horizontal level. Such was their regard to accuracy, in these sportive trials of their rifles, and of their own skill in the use of them, that they often put moss, or some other soft substance, on the log or stump from which they shot, for fear of having the bullet thrown from the mark, by the spring of the barrel. When the rifle was held to the side of a tree for a rest, it was pressed against it as lightly as possible, for the same reason.<sup>121</sup>

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<sup>118</sup> JOSEPH DODDRIDGE, NOTES ON THE SETTLEMENT AND INDIAN WARS OF THE WESTERN PARTS OF VIRGINIA AND PENNSYLVANIA FROM 1763 TO 1783, INCLUSIVE, TOGETHER WITH A REVIEW OF THE STATE OF SOCIETY AND MANNERS OF THE FIRST SETTLERS OF THE WESTERN COUNTRY 123 (John S. Ritenour & Wm. T. Lindsey eds., 1912).

<sup>119</sup> *Id.*; see also ROSE, *supra* note 106, at 19 (“In Europe hunting with guns was a pursuit reserved for the nobility, but in America, where gun ownership on the frontier was more common if not universal, even children were introduced to firearms from an early age.”).

<sup>120</sup> DODDRIDGE, *supra* note 118, at 124.

<sup>121</sup> *Id.* Alexander Rose likewise explained the unique care that Americans put into each shot:

Only American riflemen refused to “guess” how much powder to use for their personalized weapon. When they purchased a new rifle, they would rest its muzzle on the snow or on a bleached cloth and fire it. If it spat out unburned residue, they gradually reduced the powder load until none stained the white background. Then they would fashion a powder flask or charger that would dispense exactly the right amount down the barrel. For “tricky” shots, they would rely on long experience and a skilled eye to calculate whether to use extra or skim a little off. For longer ranges, where the ball would be buffeted by the wind and retarded by air resistance, they would add more powder for higher muzzle velocity and a flatter ballistic arc; to increase accuracy by reducing recoil at shorter distances, they would use less.

ROSE, *supra* note 106, at 19 (footnote omitted); see also *id.* (“Some riflemen even purchased

Shooting competitions were an activity in which nearly anyone could participate. The matches offered an ideal opportunity to hone some of the most important skills for colonial life, while providing colonists with a source of amusement—especially in rural communities where entertainment was limited.<sup>122</sup> Good marksmen were praised and admired.

Future president John Adams was especially fond of shooting. “I spent my time as idle Children do,” Adams wrote in his autobiography, “and above all in shooting, to which Diversion I was addicted to a degree of Ardor which I know not that I ever felt for any other Business, Study or Amusement.”<sup>123</sup> When he “was about nine or ten years old” he “learn’d the use of the gun and became strong enough to lift it.” “I used to take it to school and leave it in the entry,” he explained, “and the moment it was over went into the field to kill crows and squirrels.”<sup>124</sup>

His son, John Quincy Adams, who also became president, valued firearms training as well. In retirement, he wrote about a recent encounter that reminded him of his early childhood, in which he performed musket drills for militiamen:

Cary asked me if I remembered a company of militia who, about the time of the battle of Lexington in 1775, came down from Bridgewater, and passed the night at my father’s house and barn, at the foot of Penn’s Hill, and in the midst of whom my father placed me, then a boy between seven and eight years, and I went through the manual exercise of the musket by word of command from one of them. I told him I remembered it distinctly as if it had been last week. He said he was one of the company.<sup>125</sup>

Before his own presidency (which began in 1825), President James Madison sent John Quincy Adams to St. Petersburg to serve as Minister to Russia from 1809 to 1814.<sup>126</sup> Adams left his brother Thomas instructions for watching his children in his absence. Prominent among these was a request that Thomas train the children—George (age 9), John (age 7), and Charles (age 3)—with firearms:

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a long, narrow brass or iron tube about half an inch in diameter that could be screwed into the top of the barrel to function as a rudimentary ‘telescopic’ sight. (The accessory lacked a magnifying glass but certainly aided concentration”).

<sup>122</sup> See NICHOLAS JOHNSON ET AL., FIREARMS LAW AND THE SECOND AMENDMENT: REGULATION, RIGHTS AND POLICY 239 (3d ed. 2021) (“Long-distance shooting contests were major events in rural communities.”).

<sup>123</sup> 3 DIARY AND AUTOBIOGRAPHY OF JOHN ADAMS 257 (Lyman H. Butterfield ed., 1961).

<sup>124</sup> *Id.* at 258 n.6.

<sup>125</sup> 7 MEMOIRS OF JOHN QUINCY ADAMS: COMPRISING PORTIONS OF HIS DIARY FROM 1795 TO 1848, at 325 (Charles Francis Adams ed., 1875).

<sup>126</sup> 3 WRITINGS OF JOHN QUINCY ADAMS, 1801–1810, at 321 n.1 (Worthington Chauncey Ford ed., 1914).



One of the things which I wish to have them taught . . . is the use and management of firearms. . . . The accidents which happen among children arose more frequently from their ignorance, than the misuse of weapons which they know to be dangerous. . . . I beg you occasionally from this time to take George out with you in your shooting excursions, teach him gradually the use of the musket, its construction, and the necessity of prudence in handling it; let him also learn the use of pistols, and exercise him at firing at a mark.<sup>127</sup>

Thomas Jefferson, who succeeded John Adams as president after defeating him in the election of 1800, was also enthusiastic about recreational shooting in the colonial days. By the age of fourteen, Jefferson's father had taught him "to sit his horse, fire his gun, boldly stem the Rivanna when the swollen river was 'Rolling red from brae to brae,' and press his way with unflagging foot through the rocky summits of the contiguous hills in pursuit of deer and wild turkeys."<sup>128</sup> As a young man, Jefferson enjoyed shooting competitions, sometimes placing wagers on his skill. For example, in 1768, he recorded that he "Won shooting 1/6" (one sixpence), and the following year that he "Lost shooting" "2/6."<sup>129</sup>

Jefferson maintained his enthusiasm for firearms training throughout his life. In 1785 he wrote to his nephew about the best form of exercise:

As to the species of exercise, I advise the gun. While this gives a moderate exercise to the body, it gives boldness, enterprise, and independence to the mind. Games played with the ball, and others of that nature, are too violent for the body, and stamp no character on the mind. Let your gun therefore be the constant companion of your walks.<sup>130</sup>

Over three decades later, Jefferson gifted his favorite pistols to James Madison's adoptive son, John Payne Todd, "in the hope they will afford you [Todd] sport in your daily rides."<sup>131</sup> Jefferson took the opportunity to boast that he "never missed a squirrel [at] thirty. yards with them."<sup>132</sup> Even in his final years, Jefferson still declared

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<sup>127</sup> *Id.* at 497.

<sup>128</sup> 1 HENRY S. RANDALL, *THE LIFE OF THOMAS JEFFERSON* 15 (1865).

<sup>129</sup> 1 JEFFERSON'S MEMORANDUM BOOKS, ACCOUNTS, WITH LEGAL RECORDS AND MISCELLANY, 1767–1826, at 81, 150 (James A. Bear, Jr. & Lucia C. Stanton eds., 1997).

<sup>130</sup> THOMAS JEFFERSON, *WRITINGS* 816 (Merrill D. Peterson ed., 1984).

<sup>131</sup> Letter from Thomas Jefferson to John Payne Todd (Aug. 15, 1816), *in* 10 *THE PAPERS OF THOMAS JEFFERSON: RETIREMENT SERIES* 321 (J. Jefferson Looney ed., 2013). Jefferson believed the pistols would "suit" Todd because he was "a sportsman." *Id.* at 320.

<sup>132</sup> *Id.* at 321.

himself “a great friend to the manly and healthy exercises of the gun,” and suggested that “every American who wishes to protect his farm from the ravages of quadrupeds & his country from those of biped invaders . . . ought to be” a “gun-man.”<sup>133</sup>

Adams and Jefferson are especially notable because of their extraordinary roles in America’s founding, but their enthusiasm for shooting was ordinary among the colonists.

The freedom to shoot was even used to entice indentured servants to come to America. George Alsop boasted from Maryland in 1666 that “every Servant has a Gun, Powder and Shot allowed him, to sport him withall on all Holidayes and leasurable times, if he be capable of using it, or willing to learn.”<sup>134</sup> This, Alsop hoped, would appeal to Englanders who did not enjoy as much liberty as Americans to sport with arms.

Although shooting matches were a common “entertainment form,” firearms historian M.L. Brown noted that “[t]he popular shooting match” was also “practical from the standpoint of practice.”<sup>135</sup> For the colonies, like the English, depended on a trained populace to maintain domestic order via the posse comitatus and maintain a defense against invasions and insurrections via the militia.<sup>136</sup>

### C. Community Defense

In colonial America, as in England, the hue and cry and posse comitatus helped to keep the peace domestically, and the militia provided security from foreign foes—all of which consisted of ordinary members of the community who were skillful with arms.

The only colony in America without a long tradition of raising and maintaining a militia was Pennsylvania, which, due to its large and influential Quaker population, only began mandating militia service during the French and Indian War in 1755.<sup>137</sup> Yet when French and Spanish privateers terrorized the Delaware River and Atlantic coast in 1747 during King George’s War, armed and trained Pennsylvanians stepped forward to defend the colony. Benjamin Franklin published a pamphlet calling for the people of Pennsylvania to create a voluntary organization.<sup>138</sup> In the pamphlet, *Plain Truth*, Franklin argued that

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<sup>133</sup> Letter from Thomas Jefferson to Peter Minor (Jul. 20, 1822), in 18 THE PAPERS OF THOMAS JEFFERSON: RETIREMENT SERIES 565 (J. Jefferson Looney ed., 2013).

<sup>134</sup> GEORGE ALSOP, A CHARACTER OF THE PROVINCE OF MARYLAND 59 (Newton D. Mereness ed., 1902) (1666).

<sup>135</sup> BROWN, *supra* note 67, at 127.

<sup>136</sup> Kopel, *supra* note 31, at 792–94.

<sup>137</sup> Kopel & Greenlee, *supra* note 107, at 559–64. Most, but not all, Quakers were pacifists. See, e.g., DAVID B. KOPEL, THE MORALITY OF SELF-DEFENSE AND MILITARY ACTION: THE JUDEO-CHRISTIAN TRADITION 384–89 (2017) (describing diverse Quaker views on self-defense and defense of others, before and during the American Revolution).

<sup>138</sup> See *Plain Truth: Or, Serious Considerations On the Present State of the City of Philadelphia, and Province of Pennsylvania*, in 3 THE PAPERS OF BENJAMIN FRANKLIN (Leonard W. Labaree & Whitfield J. Bell, Jr eds., 1961).

If this now flourishing City, and greatly improving Colony, is destroy'd and ruin'd, it will not be for want of Numbers of Inhabitants able to bear Arms in its Defence. 'Tis computed that we have at least (exclusive of the Quakers) 60,000 Fighting Men, acquainted with Fire-Arms, many of them Hunters and Marksmen, hardy and bold.<sup>139</sup>

Franklin believed that these fighting men, hunters, and marksmen just needed “Order, Discipline, and a few Cannon.”<sup>140</sup>

*Plain Truth*, Franklin wrote later in life, “had a sudden and surprising Effect.”<sup>141</sup> A second edition was published, as was a German translation of it, and it spread throughout the colonies. Soon, over ten thousand volunteers signed up, trained regularly, and provided security to the colony.<sup>142</sup>

Militia laws were clearly not responsible for the people of Pennsylvania having and knowing how to use arms. It was the common possession and usage of arms for numerous everyday purposes such as hunting and target shooting that resulted in the population being familiar with arms and in a position to defend themselves and the Colony.<sup>143</sup>

Another group of colonists who were free from required training but voluntarily maintained firearms competency were students at Harvard College.<sup>144</sup> “[N]o sooner was the College started [in 1636] than the students began to waive their rights and volunteer to train” with the militia.<sup>145</sup> When the college later forbade the students to train with the militia, the students decided to train themselves. They petitioned in 1759 “for Liberty to exercise Themselves in the use of the Fire-Lock,” which the faculty granted them permission to do “in the Play-Place” (the site of Memorial Hall), provided that “they behave themselves orderly in their Exercise, & Particularly [t]hat [t]hey explode not any of their Fire-Locks in the College Yard, or Elsewhere (Except Volleys in the Field of Exercise.)”<sup>146</sup> By 1766, this training “was influencing college life considerably.”<sup>147</sup>

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<sup>139</sup> *Id.* at 202.

<sup>140</sup> *Id.*

<sup>141</sup> *Id.* at 278.

<sup>142</sup> DAVID E. YOUNG, *THE FOUNDERS' VIEW OF THE RIGHT TO BEAR ARMS* 18 (2007).

<sup>143</sup> *Id.* at 16–17.

<sup>144</sup> Among the college's first laws was a 1642 provision requiring a “license of the Overseers of the Colledge” to participate in the “Artillery or traine-Band.” Samuel F. Batchelder, “*The Students in Arms*”—*Old Style*, 29 *THE HARV. GRADUATES' MAG.* 549, 552 (1921).

<sup>145</sup> *Id.* (quotation marks omitted).

<sup>146</sup> *Id.* at 556–57.

<sup>147</sup> *Id.* 557 n.1.

Nearly “[e]veryone” in colonial America “was expected to be a master of precision shooting—not just for prestige, but for dinner.”<sup>148</sup> Thus, even those exempted from mandatory training often made time to train themselves. Indeed, due to their constant dependence on firearms for food and protection, and their habitual use of firearms for sport and entertainment, “[t]he Colonists in America were the greatest weapon-using people of that epoch in the world”<sup>149</sup>—a fact the British would soon learn firsthand.

### III. REVOLUTIONARY AMERICA

#### *A. Pre-War Focus on Arms Proficiency*

As tensions rose between Britain and its North American colonies, Americans’ emphasis on marksmanship intensified. They had always relied on accuracy for their most essential needs, but it was now becoming increasingly clear that ordinary Americans—farmers, merchants, shopkeepers, etc.—would have to confront the world’s strongest military.

Understanding that their independence would largely depend on their ability to outshoot professional British soldiers, Americans soon equated firearms competence with freedom. Thus, Reverend Simeon Howard, in his famous 1773 sermon in Boston, expressed the need for a free people to be trained in arms:

A people who would stand fast in their liberty, should furnish themselves with weapons proper for their defence, and learn the use of them . . . . However numerous they may be, if they are unskilled in arms, their number will tend little more to their security, than that of a flock of sheep does to preserve them from the depredations of the wolf: accordingly it is looked upon as a point of wisdom, in every state, to be furnished with this skill, though it is not to be obtained without great labor and expence.<sup>150</sup>

Influential Boston patriot Josiah Quincy echoed this sentiment, asserting that “[t]he supreme power is ever possessed by those who have arms in their hands, and are disciplined to the use of them.”<sup>151</sup> Accordingly, the Provincial Congress of

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<sup>148</sup> JOHNSON ET AL., *supra* note 122, at 239.

<sup>149</sup> SAWYER, *supra* note 105, at 1.

<sup>150</sup> A SERMON PREACHED TO THE ANCIENT AND HONORABLE ARTILLERY-COMPANY, IN BOSTON, NEW ENGLAND, JUNE 7TH, 1773, at 25–26 (1773).

<sup>151</sup> Josiah Quincy, Jr., Observations on the Act of Parliament Commonly Called the Boston Port-Bill: With Thoughts on Civil Society and Standing Armies (1774), *in* MEMOIR OF THE LIFE OF JOSIAH QUINCY, JUNIOR, OF MASSACHUSETTS: 1774–1775, at 347 (2d ed. 1874).

Massachusetts in 1775 advocated for “all the inhabitants of this colony, to be diligently attentive to learning the use of arms.”<sup>152</sup>

As noted above, the inhabitants had long done so. The *Boston Gazette* reported that “[b]esides the regular trained militia in New-England, all the planters sons and servants are taught to use the fowling piece from their youth, and generally fire balls with great exactness at fowl or beast.”<sup>153</sup> This phenomenon was confirmed by an Englishman visiting New England in 1774, who noted that “in the cities you scarcely find a Lad of 12 years that does not go a Gunning.”<sup>154</sup> In other colonies it was no different. For instance, a Virginia gentleman described American arms culture to his Scottish friend by explaining that “[w]e are all in arms, exercising and training old and young to the use of the gun.”<sup>155</sup> Benjamin Franklin reported that “I found at my arrival all America from one End of the 12 united Provinces to the other, busily employed in learning the Use of Arms.”<sup>156</sup>

The Americans were confident their firearms expertise would give them a significant edge over their British adversaries. Although they generally had less experience as soldiers and many had never seen war, they had been using firearms their entire lives. John Zubly, a Savannah minister, warned the British that “in the strong sense of liberty, and the use of firearms almost from the cradle, the Americans have vastly the advantage over men of their rank almost everywhere else.”<sup>157</sup> He added that American children were “shouldering the resemblance of a gun before they are well able to walk.”<sup>158</sup> The eccentric Major General Charles Lee—Washington’s second-in-command—also believed that the Americans’ lifelong familiarity and expertise with arms would allow them to prevail over the British. Lee found “reason to doubt” that the British troops “composed of the refuse of an exhausted nation . . . should be able to conquer 200,000 active, vigorous yeomanry, fired with the noble ardour . . . all armed, all expert in the use of arms, almost from their cradles.”<sup>159</sup>

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<sup>152</sup> N.H. GAZETTE, Jan. 27, 1775, at 1.

<sup>153</sup> BOS. GAZETTE, Dec. 5, 1774, at 4.

<sup>154</sup> DAVID HARSANYI, *FIRST FREEDOM: A RIDE THROUGH AMERICA’S ENDURING HISTORY WITH THE GUN* 47 (2018).

<sup>155</sup> Peter Force, *The King’s Message to Parliament, of March 7, 1774, to the Declaration of Independence by the United States*, in 3 *AMERICAN ARCHIVES: A DOCUMENTARY HISTORY OF THE ENGLISH COLONIES IN NORTH AMERICA* 621 (4th Ser., Peter Force ed., 1840) [hereinafter 3 *AMERICAN ARCHIVES*].

<sup>156</sup> Letter from Benjamin Franklin to Jonathan Shipley (July 7, 1775), in 1 *LETTERS OF DELEGATES TO CONGRESS, 1774–1789*, at 604 (Paul H. Smith ed., 1976).

<sup>157</sup> MOSES COIT TYLER, *THE LITERARY HISTORY OF THE AMERICAN REVOLUTION, 1763–1776*, at 484 (1898).

<sup>158</sup> *Id.* at 485.

<sup>159</sup> *To the People of America* (Feb. 3, 1775) in *MEMOIRS OF THE LIFE OF THE LATE CHARLES LEE, ESQ.* 142 (1792). Lee was notoriously odd. In an intercepted letter that eventually found its way to Lee, John Adams wrote, “[Lee] is a queer creature, but you must love his dogs if you love him, and forgive a thousand whims for the sake of the soldier and the

In fact, Americans' constant use of firearms did make them remarkable marksmen. One example was provided by John Andrews, an aid to British General Thomas Gage, who recounted an incident in which Redcoats were unsuccessfully trying to shoot at a target on the Boston Common. When an American mocked them, a British officer dared the American to do better. The American repeatedly hit the target, and "[t]he officers as well as the soldiers *star'd*, and tho't the Devil was in the man. *Why*, says the countryman, I'll tell you *naow*. I have got a *boy* at home that will toss up an apple and shoot out all the seeds as its coming down."<sup>160</sup> A clearly exaggerated report from London warned that American militiamen "all have and can use arms . . . in so particular a manner, as to be capable of shooting a Pimple off a man's nose without hurting him."<sup>161</sup>

James Madison was more realistic in boasting about Virginia's marksmen, as well as his own marksmanship:

The strength of this Colony will lie chiefly in the rifle-men of the Upland Counties, of whom we shall have great numbers. You would be astonished at the perfection this art is brought to. The most inexpert hands rec[k]on it an indifferent shot to miss the bigness of a man's face at the distance of 100 Yards. I am far from being among the best & should not often miss it on a fair trial at that distance. If we come into an engagement, I make no doubt but the officers of the enemy will fall at the distance before they get within 150 or 200 Yards. Indeed I believe we have men that would very often hit such a mark 250 Yds. Our greatest apprehensions proceed from the scarcity of powder but a little will go a great way with such as use rifles.<sup>162</sup>

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scholar." Letter from John Adams to James Warren (July 24, 1775), in 2 THE WORKS OF JOHN ADAMS, SECOND PRESIDENT OF THE UNITED STATES 412 (Charles Francis Adams ed., 1850). To his credit, Lee took no apparent offense, writing to Adams:

As you may possibly harbor some suspicions that a certain passage in your intercepted letters (may) have made some disagreeable impressions on my mind I think it necessary to assure you that it is quite the reverse. Until the bulk of mankind is much alter'd, I consider the reputation of being whimsical and eccentric rather as a panegyric than sarcasm, and my love of dogs passes with me as a still higher complement.

Letter from Charles Lee to John Adams (Oct. 5, 1775), in 2 THE WORKS OF JOHN ADAMS, SECOND PRESIDENT OF THE UNITED STATES 414 (Charles Francis Adams ed., 1850).

<sup>160</sup> LETTERS OF JOHN ANDREWS, ESQ., OF BOSTON, 1772–1776, at 59 (Winthrop Sargent ed., 1866).

<sup>161</sup> BOS. EVENING POST, Nov. 21, 1768, at 2, col. 3.

<sup>162</sup> Letter from James Madison to William Bradford (June 19, 1775), in 1 THE PAPERS OF JAMES MADISON 153 (William T. Hutchinson et al. eds., 1962).

Madison was correct. Virginia had a tremendous number of sharpshooters. So many, in fact, that when General Washington sought five hundred riflemen, a competition had to be held because far more applied.<sup>163</sup> They were such skilled shots, however, that they destroyed the target before most had an opportunity:

The commanding Officer . . . took a board of a foot squar and with Chalk drew the shape of a moderate nose in the center and nailed it up to a tree at 150 yd distance and those who came nighest the mark with a single ball was to go. But by the first 40 or 50 that fired the nose was all blown out of the board, and by the time his Comp. was up the board shared the same fate.<sup>164</sup>

Washington, as could be expected, selected his riflemen carefully. And he believed that those who were accustomed to using arms in their daily lives were the most desirable. Thus, Washington wrote, “great care should be observed in choosing active marksmen. The manifest inferiority of inactive persons, unused to arms, in this kind of service, (although equal in numbers,) to men who have practised hunting, is inconceivable. The chance against them is more than two to one.”<sup>165</sup>

A Pennsylvanian wrote of another impressive company of roughly a thousand riflemen.<sup>166</sup> “They are, at listing, rejected, unless they can hit a playing-card, without a rest, at one hundred and twenty yards distance,” he said.<sup>167</sup> Like many Americans, he believed their training and skill gave them the advantage over the British. “Almost every sensible man, in all the colonies, is trained, and ready to supply any loss,” he asserted, whereas “[t]he regulars have . . . never appeared equal to our troops, man for man.”<sup>168</sup>

#### *B. Effect of Arms Training in the Revolutionary War*

The Revolutionary War began on April 19, 1775, when the British set out to seize American munitions at Concord, Massachusetts and the Americans resisted with arms, leading to “the shot heard round the world” and the Battles of Lexington and Concord.<sup>169</sup> The Americans’ success surprised many and proved the colonists

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<sup>163</sup> Diary of John Harrower, 1773–1776, in 6 THE AMERICAN HISTORICAL REVIEW 100 (1900).

<sup>164</sup> *Id.* The *Virginia Gazette* mockingly warned “General Gage, take care of *your* nose.” 1 DIARY OF THE AMERICAN REVOLUTION: FROM NEWSPAPERS AND ORIGINAL DOCUMENTS 111 (Frank Moore ed., 1863).

<sup>165</sup> 2 THE WRITINGS OF GEORGE WASHINGTON 140 (Jared Sparks ed., 1883).

<sup>166</sup> 1 LETTERS OF DELEGATES TO CONGRESS, 1774–1789, *supra* note 156, at 609.

<sup>167</sup> *Id.*

<sup>168</sup> *Id.*

<sup>169</sup> *Lexington and Concord: The Shot Heard 'Round the World*, AM. BATTLEFIELD TR.,



could indeed stand up to the powerful British military. Despite being comparatively undisciplined, the Massachusetts farmers, historian Richard Frothingham, Jr. explained, were more effective than the experienced troops due to the farmers' lifelong use of arms:

[T]his ill-appointed army was not entirely unprepared for an encounter. Some of its officers, and not a few of the privates, had served in the French wars,—an invaluable military school for the colonies; a martial spirit had been excited in the frequent trainings of the minute-men, while the habitual use of the fowling-piece made these raw militia superior to veteran troops in aiming the musket.<sup>170</sup>

After the Battles of Lexington and Concord, Americans prepared for war. As earlier writings demonstrated, Americans' firearms proficiency was the pride of the nation, and their extraordinary skill was frequently used to boost morale among the patriots and intimidate the enemy.

The Continental Congress highlighted the Americans' shooting skills to warn King George III that they would make for a formidable foe.<sup>171</sup> The Congress cautioned that “[M]en trained to Arms from their infancy, and animated by the love of liberty, will afford neither a cheap or easy conquest.”<sup>172</sup>

Bearing out this warning, Americans' success in the Revolutionary War was widely attributed to their familiarity and training with arms. Discussing the 1775 Battle of Bunker Hill in 1789, David Ramsay, a South Carolina legislator and delegate to the Continental Congress, explained that,

None of the provincials in this engagement were riflemen, but they were all good marksmen. The whole of their previous military knowledge had been derived from hunting, and the ordinary amusements of sportsmen. The dexterity which by long habit they had acquired in hitting beasts, birds, and marks [i.e., targets], was fatally applied to the destruction of British officers.<sup>173</sup>

Ramsay determined that Americans had an advantage because “the inhabitants had been, from their early years . . . taught the use of arms.”<sup>174</sup> “Europeans,” by contrast,

<https://www.battlefields.org/learn/articles/lexington-and-concord-shot-heard-round-world>  
<https://perma.cc/G47C-X8VE> (last visited Oct. 18, 2022).

<sup>170</sup> RICHARD FROTHINGHAM, HISTORY OF THE SIEGE OF BOSTON, AND OF THE BATTLES OF LEXINGTON, CONCORD, AND BUNKER HILL 102–03 (3d ed. 1873).

<sup>171</sup> 1 JOURNALS OF THE AMERICAN CONGRESS FROM 1774–1788, at 106–11 (1823).

<sup>172</sup> *Id.* at 110.

<sup>173</sup> 1 DAVID RAMSAY, THE HISTORY OF THE AMERICAN REVOLUTION 204 (1789).

<sup>174</sup> *Id.* at 191.



“from their being generally unacquainted with fire arms are less easily taught the use of them than Americans, who are from their youth familiar with these instruments of war.”<sup>175</sup>

Thomas Jefferson suggested that American casualties were far fewer than British casualties because Americans were better marksmen. Jefferson wrote “[t]his difference [in casualties] is ascribed to our superiority in taking aim when we fire; every soldier in our army having been intimate with his gun from his infancy.”<sup>176</sup> George Washington confirmed Jefferson’s assertions: “Our Scouts, and the Enemy’s Foraging Parties, have frequent skirmishes; in which they always sustain the greatest loss in killed and Wounded, owing to our Superior skill in Fire arms.”<sup>177</sup>

As the war raged on, John Hancock, President of the Continental Congress, praised American riflemen as “the finest Marksmen in the world.”<sup>178</sup> Fellow Massachusettsian John Adams expressed similar acclaim, calling them “the most accurate Marksmen in the world.”<sup>179</sup> Even greater admiration came from a clergyman in Maryland in a series of letters to the Earl of Dartmouth:

In this country, my Lord, the boys, as soon as they can discharge a gun, frequently exercise themselves therewith, some a fowling, and others a hunting. The great quantities of game, the many kinds, and the great privileges of killing, make the *Americans* the best marksmen in the world, and thousands support their families principally by the same, particularly riflemen on the frontiers, whose objects are deer and turkies. In marching through woods, one thousand of these riflemen would cut to pieces ten thousand of your best troops. I don’t, my Lord, speak at random, or write partially. I have travelled too much among these men to be insensible of their abilities.<sup>180</sup>

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<sup>175</sup> *Id.* at 195.

<sup>176</sup> 1 THE WORKS OF THOMAS JEFFERSON 208 (H. A. Washington ed., 1884).

<sup>177</sup> 7 THE WRITINGS OF GEORGE WASHINGTON: FROM THE ORIGINAL MANUSCRIPTS 1745–1799, at 198 (John C. Fitzpatrick ed., 1932).

<sup>178</sup> Letter from John Hancock to Joseph Warren (June 18, 1775), in 1 LETTERS OF MEMBERS OF THE CONTINENTAL CONGRESS 134 (Edmund C. Burnett ed., 1921).

<sup>179</sup> Letter from John Adams to Abigail Adams (June 11, 1775), 1 ADAMS FAMILY CORRESPONDENCE: DECEMBER 1761–MAY 1776, at 215 (Lyman H. Butterfield ed., 1963).

<sup>180</sup> Peter Force, *The Origin and Progress of the North American Colonies; of the Causes and Accomplishment of the American Revolution; and of the Constitution of Government for the United States, to the Final Ratification Thereof*, in 4 AMERICAN ARCHIVES: A DOCUMENTARY HISTORY OF THE ENGLISH COLONIES IN NORTH AMERICA FROM THE KING’S MESSAGE TO PARLIAMENT, OF MARCH 7, 1774 TO THE DECLARATION OF INDEPENDENCE BY THE UNITED STATES 360 (4th Ser., Peter Force ed., 1843).

In another letter the Minister warned, “O, my Lord! if your Lordship knew but one half what I know of *America*, your Lordship would not persist, but be instantly for peace, or resign.”<sup>181</sup>

Another warning, this one from William and Thomas Bradford of Philadelphia, was published in the *London Chronicle* on August 17, 1775. It warned that “[t]his province has raised 1000 rifle-men, the worst of whom will put a ball into a man’s head at a distance of 150 yards or 200 yards, therefore advise your officers who shall hereafter come out to America, to settle their affairs in England before their departure.”<sup>182</sup>

The expectations for American marksmen were high, and they were eager to show off their skills. In the summer of 1775, General Washington “arranged a spectator review of his riflemen.”<sup>183</sup>

In the presence of the army, drawn up in parallel lines each side of the range and an immense crowd of spectators, in which a number of British spies were welcome visitors, a pole 7 inches in diameter was set up, and a marksman stepped off about 250 spaces. At the place where he stopped a company of riflemen was lined up to show what they could do. The mark was about equal to that a man would present standing sideways, and the range about 200 yards. . . . the riflemen, firing singly or at command, so riddled the pole that it was apparent that no enemy could survive an instant.<sup>184</sup>

“General Howe,” the commander-in-chief of the British land forces, “was fully as much impressed as the spectators, and wrote home about the ‘terrible guns of the rebels.’”<sup>185</sup>

A letter from Maryland on August 1, 1775, described an impressive display that occurred there.

[I]n the evening, however, they [the riflemen] were drawn out to show the gentlemen of the Town their dexterity at shooting. A clapboard, with a mark the size of a dollar, was put up; they

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<sup>181</sup> *Id.* at 361.

<sup>182</sup> *Extract of a Letter from Messrs. Bradford, of Philadelphia, to the Printer of a Public Paper, dated Philadelphia, July 8, 1775, in* LETTERS ON THE AMERICAN REVOLUTION, 1774–1776, at 167 (Margaret Wheeler Willard ed., 1925).

<sup>183</sup> SAWYER, *supra* note 105, at 79.

<sup>184</sup> *Id.* at 80; *see also* JOHN G. W. DILLIN, THE KENTUCKY RIFLE 84 (Palladium Press 1998) (1924) (“The *Pennsylvania Gazette* of August 5, 1775, says of the corps: ‘A party of these men at a late review on a quick advance, placed their balls in poles of 7 inches diameter, fixed for that purpose, at the distance of 250 yards.’ This statement was copied into the *London Chronicle*, August 3–5, and into Almon’s *Remembrance* for 1775, 4th ed.”).

<sup>185</sup> SAWYER, *supra* note 105, at 80.

began to fire off-hand, and the bystanders were surprised, few shots being made that were not close to or in the paper. When they had shot for a time in this way, some lay on their backs, some on their breast or side, others ran twenty or thirty steps, and firing, appeared to be equally certain of their mark. With this performance the company were more than satisfied, when a young man took up the board in his hand, not by the end, but by the side, and holding it up, his brother walked to the distance, and very coolly shot into the white; laying down his rifle, he took the board, and holding it as it was held before, the second brother shot as the former had done. By this exercise I was more astonished than pleased. But will you believe me, when I tell you, that one of the men took the board, and placing it between his legs, stood with his back to the tree while another drove the centre.<sup>186</sup>

A few days later, the *Virginia Gazette* reported another remarkable display that occurred in Lancaster, Pennsylvania.

Two brothers in the company took a piece of board five inches broad and seven inches long, with a bit of white paper, about the size of a dollar, nailed in the centre, and while one of them supported this board perpendicularly between his knees, the other, at the distance upwards of sixty yards, and without any kind of rest, shot eight bullets through it successively, and spared a brother's thigh! Another of the company held a barrel stave perpendicularly in his hands with one edge close to his side, while one of his comrades, at the same distance, and in the manner before mentioned, shot several bullets through it, without any apprehension of danger on either side. The spectators appearing to be amazed at these feats, were told that there were upwards of fifty persons in the same company who could do the same thing; that there was not one who could not plug nineteen bullets out of twenty, as they termed it, within an inch of the head of a tenpenny nail.<sup>187</sup>

The *Gazette* added that “some of them proposed to stand with apples on their heads, while others at the same distance, undertook to shoot them off; but the people who

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<sup>186</sup> Letter from Richard Henry Lee to General Washington August 1, 1775, in 3 AMERICAN ARCHIVES, *supra* note 155, at 1.

<sup>187</sup> 1 DIARY OF THE AMERICAN REVOLUTION FROM NEWSPAPERS AND ORIGINAL DOCUMENTS, *supra* note 164, at 122.

saw the other experiments declined to be witnesses of this.”<sup>188</sup> It goes without saying that this high degree of skill could be acquired only through extensive training.

It did not take long for the Americans to get their chance to demonstrate their skill in battle. In Boston, the riflemen picked off Howe’s men from long distances. One rifleman, “seeing some British on a scow at a distance of fully half a mile, found a good resting place on a hill and bombarded them until he potted the lot.”<sup>189</sup> The British soldiers soon discovered that “it was almost certain death to expose their heads within two hundred yards of the riflemen.”<sup>190</sup> As the Army surgeon Dr. James Thacher observed,

These men are remarkable for the accuracy of their aim; striking a mark with great certainty at two hundred yards distance. At a review, a company of them, while on a quick advance, fired their balls into objects of seven inches diameter, at the distance of two hundred and fifty yards. . . . their shot have frequently proved fatal to British officers and soldiers, who expose themselves to view, even at more than double the distance of common musket-shot.<sup>191</sup>

On August 16, 1775, the *Pennsylvania Gazette* reported: “We are also told that the riflemen had in one day killed ten of a reconnoitering party; and it is added likewise, that they have killed three Field officers. A centry was killed at 250 yards distance.”<sup>192</sup> The *Pennsylvania Packet* added about the sentry that “only half his head was seen.”<sup>193</sup> On the 21st, the *Pennsylvania Gazette* further reported: “Last Wednesday, some rifleman, on Charlestown side, shot an officer of note in the ministerial service . . . and killed three men on board a ship at Charlestown ferry, at the distance of full half a mile.”<sup>194</sup>

Those would not be the only stunningly long shots of the war. When an English soldier on the New Jersey side of the Delaware River “mocked” Jacobus Scout, who was on the Pennsylvania side of the river, the Pennsylvanian gunsmith “shot [the] English soldier at 900 yards and killed him.”<sup>195</sup> Another example occurred during

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<sup>188</sup> *Id.*

<sup>189</sup> SAWYER, *supra* note 105, at 81.

<sup>190</sup> W.H. Hunter, *The Pathfinders of Jefferson County, Ohio*, in 6 OHIO ARCHEOLOGICAL AND HISTORY PUBLICATIONS 222 n.35 (Fred J. Heer ed., 1900, Supp. 1980).

<sup>191</sup> JAMES THACHER, A MILITARY JOURNAL DURING THE AMERICAN REVOLUTIONARY WAR: FROM 1775 TO 1783, at 38 (1823).

<sup>192</sup> DILLIN, *supra* note 184, at 84.

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* at 85.

<sup>195</sup> HISTORY OF BUCKS COUNTY, PENNSYLVANIA 220 (J.H. Battle ed., 1887); *Tales from the 1769 Vansant/Craven Burying Ground*, THE CRAVEN HALL NEWSLETTER (Craven Hall Historical Society, Warminster, Pa.), Mar. 2021, at 7, <https://bit.ly/3CWMLYr> [<https://perma.cc/A5FE-RAWY>]. The inscription on Scout’s gravestone noted that “he shot an English soldier at 900 yards and killed him,” and “he was an intimate friend of Thomas Paine.” *Id.*

the 1778 Siege at Boonesborough: the Shawnees fired into Daniel Boone's fort from hills roughly three hundred yards away<sup>196</sup> and a Shawnee interpreter was said to have been shot at six hundred yards.<sup>197</sup>

Perhaps no long-distance shot was as consequential as Timothy Murphy's during the Battle of Saratoga. The Pennsylvania hunter killed General Simon Fraser from around three hundred yards when the general was rallying his troops during a pivotal point in the battle, which became a turning point in the war.<sup>198</sup> The victory provided the Americans a badly needed morale boost, and it also motivated the French to enter the war in support of the Americans.

Murphy received the order to shoot from Daniel Morgan, in whose rifleman company Murphy served. Morgan, like Washington and other rifle commanders, held a shooting competition for admission into his company.<sup>199</sup> Morgan's shooters were apparently "singularly excellent" because he took twenty-eight more riflemen than the sixty-eight the Congress allowed him.<sup>200</sup> When Morgan assembled the 11th Virginia Regiment, he "found the best shooters in western Virginia by setting up a target depicting a British officer's head (some said it was of King George III) at one hundred yards and requiring his recruits to hit it on their first shot."<sup>201</sup> The Marquis de Lafayette explained that Morgan's riflemen "had been taken, not from different corps, but from parts of the country on the frontiers of the savage tribes, and from amongst men whose mode of life, and skill in firing their long carbines, rendered them particularly useful in that service."<sup>202</sup>

"[T]he best marksman in the British Army,"<sup>203</sup> British Major George Hanger, provided "a proof of [the] most excellent skill of an American rifleman" and challenged "any man [to] shew me an instance of better shooting."<sup>204</sup> He explained that he and others were discretely planning an attack when suddenly an American rifleman killed one of their horses from 300 yards away.<sup>205</sup> As an American captive during the war, Hanger used the opportunity to learn from the Americans about their training and techniques:

I have often asked American riflemen, what was the most they thought they could do with their rifle? They have replied, that

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<sup>196</sup> LYMAN COPELAND DRAPER, *THE LIFE OF DANIEL BOONE* 529 (Ted Franklin Belue ed., 1998).

<sup>197</sup> Rufus L. Porter, *Porter's Fort*, COLO. SPRINGS GAZETTE TEL., Jan. 2, 1973, at 18.

<sup>198</sup> SAWYER, *supra* note 105, at 86.

<sup>199</sup> ROSE, *supra* note 106, at 43.

<sup>200</sup> *Id.*

<sup>201</sup> *Id.* at 51.

<sup>202</sup> Lafayette "the Friend of America": *The First Champion of Revolutionary France, 1757–1834*, in 10 UNIVERSITY LIBRARY OF AUTOBIOGRAPHY 295–96 (1918).

<sup>203</sup> ROSE, *supra* note 106, at 56.

<sup>204</sup> GEORGE HANGER, COLONEL GEORGE HANGER'S ADVICE TO ALL SPORTSMEN, FARMERS AND GAMEKEEPERS 122 (1814).

<sup>205</sup> *Id.*

they thought they were generally sure of splitting a man's head at two hundred yards, for so they termed their hitting the head. I have also asked several whether they could hit a man at four hundred yards,—they have replied certainly, or shoot very near him, by only aiming at the top of his head.<sup>206</sup>

Hanger was “certain, that, provided an American rifleman were to get a perfect aim at 300 yards at me, standing still, he most undoubtedly would hit me.”<sup>207</sup> He concluded that “I never in my life saw . . . men who shot better” than the American riflemen.<sup>208</sup>

Many British soldiers agreed. “In the British camp the riflemen were called . . . the most fatal widow-and-orphan makers in the world.”<sup>209</sup> And it was not just the riflemen that impressed with their accuracy. One British officer remarked that the Americans shot well despite low-quality firearms: “These fellows were generally good marksmen, and many of them used long guns made for Duck-Shooting.”<sup>210</sup>

The Americans likely would have lost the war if not for their superior marksmanship. The odds were overwhelmingly stacked against them. They faced a dangerous scarcity of firearms, ammunition, food, salt, clothing, medical supplies, and money for much of the war. They had a smaller fighting force, drawn from a smaller general population, which was far less experienced in battle. They also had to face paid Hessian mercenaries, hostile Native Americans, and British loyalists, in addition to the British military. But they were able to overcome these obstacles with their zeal for independence and their remarkable skill with arms. They learned firsthand how valuable lifelong firearms practice could be in resisting a tyrannical government, and they kept that lesson in mind when forming their own government.

#### IV. RATIFICATION OF THE UNITED STATES CONSTITUTION

##### *A. State Constitutions*

In 1787 and 1788, John Adams published his *Defence of the Constitutions of Government of the United States of America*, a defense of the various state constitutions throughout the United States. Emphasizing the benefits of the militia, Adams argued that a trained populace could not be tyrannized: “That the people be continually trained up in the exercise of arms,” ensures that “nothing could at any time be

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<sup>206</sup> *Id.* at 144.

<sup>207</sup> *Id.* at 210.

<sup>208</sup> *Id.* at 122.

<sup>209</sup> Hunter, *supra* note 190, at 222 n.35 (quotations omitted).

<sup>210</sup> FREDERICK MACKENZIE, A BRITISH FUSILIER IN REVOLUTIONARY BOSTON, BEING THE DIARY OF LIEUTENANT FREDERICK MACKENZIE, ADJUTANT OF THE ROYAL WELCH FUSILIERS, JANUARY 5–APRIL 30, 1775, at 67 (Allen French ed., 1926).

imposed upon the people but by their consent.”<sup>211</sup> That was why “Rome, and the territories about it, were trained up perpetually in arms.”<sup>212</sup>

For the same reason, Virginia’s 1776 declaration of rights provided that “a well-regulated militia, composed of the body of the people, trained to arms, is the proper, natural, and safe defence of a free State.”<sup>213</sup> Pennsylvania’s 1776 constitution was the first adopted after the Declaration of Independence. Its Declaration of Rights stated that “the people have a right to bear arms for the defence of themselves and the state.”<sup>214</sup> Its “plan or frame of government” provided that “[t]he freemen of this commonwealth and their sons shall be trained and armed for its defence under such regulations, restrictions, and exceptions as the general assembly shall by law direct.”<sup>215</sup> Drawing on Pennsylvania’s constitution, Vermont’s 1777 constitution ensured that “the people have a right to bear arms for the defence of themselves and the State.”<sup>216</sup> Under its “Plan or Frame of Government,” it used Pennsylvania’s language ensuring that the “[t]he freemen of this Commonwealth, and their sons, shall be trained and armed for its defence.”<sup>217</sup> Vermont’s 1786 constitution kept the language of the arms provision from its 1777 declaration of rights, but provided more general training language: “The inhabitants of this Commonwealth shall be trained and armed for its defence, under such regulations, restrictions, and exceptions, as the General Assembly shall by law direct.”<sup>218</sup> In its 1793 constitution, adopted after the U.S. Constitution and the Bill of Rights, Vermont again kept the 1777 declaration of rights language to protect arms rights,<sup>219</sup> and made another minor change to the training language:

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<sup>211</sup> 3 JOHN ADAMS, A DEFENCE OF THE CONSTITUTIONS OF GOVERNMENT OF THE UNITED STATES OF AMERICA 471–72 (1787–88) (quoting MARCHAMONT NEDHAM, THE RIGHT CONSTITUTION OF A COMMONWEALTH 89 (1656)).

<sup>212</sup> *See id.* at 472.

<sup>213</sup> 7 THE FEDERAL AND STATE CONSTITUTIONS COLONIAL CHARTERS, AND OTHER ORGANIC LAWS OF THE STATES, TERRITORIES, AND COLONIES NOW OR HERETOFORE FORMING THE UNITED STATES OF AMERICA 3814 (Francis Newton Thorpe ed., 1909).

<sup>214</sup> 5 THE FEDERAL AND STATE CONSTITUTIONS COLONIAL CHARTERS, AND OTHER ORGANIC LAWS OF THE STATES, TERRITORIES, AND COLONIES NOW OR HERETOFORE FORMING THE UNITED STATES OF AMERICA 3083 (Francis Newton Thorpe ed., 1909).

<sup>215</sup> *Id.* at 3084.

<sup>216</sup> 6 THE FEDERAL AND STATE CONSTITUTIONS COLONIAL CHARTERS, AND OTHER ORGANIC LAWS OF THE STATES, TERRITORIES, AND COLONIES NOW OR HERETOFORE FORMING THE UNITED STATES OF AMERICA 3741 (Francis Newton Thorpe ed., 1909).

<sup>217</sup> *Id.* at 3742.

<sup>218</sup> *Id.* at 3758. In the declaration of rights, a comma was added so it read: “the people have a right to bear arms, for the defence of themselves and the State.” *Id.* at 3753. Notably, in writing the 1786 constitution, the convention entertained—and rejected—a proposal to change “a right to bear arms for the defence of themselves and the State” into “a right to bear arms for the defence of the community.” VERMONT STATE PAPERS 518 (1823).

<sup>219</sup> This time, the comma was removed, so it used the exact punctuation of the 1777 guarantee: “the people have a right to bear arms for the defence of themselves and the State.” 6 THE FEDERAL AND STATE CONSTITUTIONS COLONIAL CHARTERS, AND OTHER ORGANIC



“The inhabitants of this State shall be trained and armed for its defence, under such regulations, restrictions, and exceptions, as Congress, agreeably to the Constitution of the United States, and the Legislature of this State, shall direct.”<sup>220</sup>

*B. Debates over the Ratification of the Constitution*

During the debates over the United States Constitution, the assertion that an armed and trained populace was the best defense against a tyrannical government was undisputed.<sup>221</sup> Both Federalists and Antifederalists agreed that a populace trained in arms was an essential bulwark that the new government depended upon.

A Federalist writing in the *Philadelphia Independent Gazetteer* on October 23, 1787, asserted that a tyrannical government “could never prevail over an hundred thousand men armed and disciplined, owners of the country, animated not only with a spirit of liberty, but ardent resentment against base treacherous tyrants.”<sup>222</sup>

In Federalist 29, Alexander Hamilton made a similar argument. A standing army was not a serious threat to American liberty, he declared, because “that army can never be formidable to the liberties of the people, while there is a large body of citizens little if at all inferior to them in discipline and the use of arms, who stand ready to defend their own rights and those of their fellow citizens.”<sup>223</sup> To Hamilton, a populace armed and trained was “the best possible security against” an oppressive standing army.<sup>224</sup>

“The Republican,” writing in the *Connecticut Courant* on January 7, 1788, explained that because Americans possessed arms and knew how to use them, they were safe from tyrants and foreign invasions.

It is a capital circumstance in favor of our liberty that the people themselves are the military power of our country. In countries under arbitrary government, the people oppressed and dispirited neither possess arms nor know how to use them. Tyrants never feel secure until they have disarmed the people. They can rely

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LAWS OF THE STATES, TERRITORIES, AND COLONIES NOW OR HERETOFORE FORMING THE UNITED STATES OF AMERICA 3764 (Francis Newton Thorpe ed., 1909).

<sup>220</sup> *Id.* at 3768.

<sup>221</sup> See WILLIAM RAWLE, A VIEW OF THE CONSTITUTION OF THE UNITED STATES OF AMERICA 121 (1825) (“The first [principle of the Second Amendment] is a declaration that a well regulated militia is necessary to the security of a free state; a proposition from which few will dissent.”).

<sup>222</sup> *Essay on Federal Sentiments*, PHILA. INDEP. GAZETTEER, Oct. 23, 1787, reprinted in 32 THE DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 435 (John P. Kaminiski et al. eds., 2019).

<sup>223</sup> THE FEDERALIST NO. 29 (Alexander Hamilton).

<sup>224</sup> *Id.*



upon nothing but standing armies of mercenary troops for the support of their power. But the people of this country have arms in their hands; they are not destitute of military knowledge; every citizen is required by law to be a soldier; we are all marshaled into companies, regiments, and brigades for the defense of our country. This is a circumstance which increase the power and consequence of the people; and enables them to defend their rights and privileges against every invader.<sup>225</sup>

Draft speeches intended to be presented at the Maryland Convention further reflect the Framers' understanding of the right to keep and bear arms. One such speech was published in the *Maryland Journal* during July and August of 1788. "It was not delivered, because it was agreed among the members of the majority [the Federalists] not to waste time or protract the decision by arguments in favour of the system."<sup>226</sup> The Federalist's speech explained how a great body of the people, "all of whom know the use of fire-arms," will prevent the American government from using its military against its own people:

Suppose even this improbable circumstance, an army of 10,000 men embodied for our destruction, before even the alarm shall be spread! The vast extent of our territory, the exertions of thirteen governments, the diffusion of knowledge and the spirit of liberty amongst the citizens of thirteen different states, all of whom know the use of fire-arms, would soon prove the folly and madness of the undertaking. In such a case, the president and congress might, in vain, call upon the militia. In such a case the force of the militia would be exerted against the base traitors to their country.<sup>227</sup>

Charles Carroll was a Federalist who prepared a speech expecting to be elected as a delegate to Maryland's convention—his county, however, elected four Antifederalists instead. According to Carroll, because Americans had arms and the ability to use them, they were safer from tyranny than Europeans who had neither:

The situation of our People is also very different from those of Europe in general; our citizens have arms in their hands, &

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<sup>225</sup> *The Republican: To the People*, CONN. COURANT, Jan. 7, 1788, reprinted in 3 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 529–30 (Merrill Jensen ed., 1978).

<sup>226</sup> *Text of a Federalist Speech Not Delivered in the Maryland Convention*, MD. JOURNAL, July 25, 29 & August 1, 5, 8, 1788, reprinted in 12 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 867 (John P. Kaminski et al. eds., 2015).

<sup>227</sup> *Id.* at 885.

know the use of them; the common People of Europe are disarmed, & in general would handle a musket as awkwardly as Hadley's quadrant: The passion for hunting, & the pride of the gentry & nobility co-operating with an insidious policy have wrested from the peasantry of Europe those arms which might serve, under favorable auspices, & in critical emergencies to vindicate & maintain their just rights.—By the federal Constitution all orders of nobility are expressly excluded, and there is no probability of the game laws being introduced into any of the States, of course the great body of the People will retain their arms, and I flatter myself the spirit to use them on every proper occasion.<sup>228</sup>

If a trained populace was essential to preventing tyranny, an untrained populace was dangerous to liberty. The influential Antifederalist, “Federal Farmer,” warned about the perils of a general population too busy with their private affairs to maintain arms proficiency:

But, say gentlemen, the general militia are for the most part employed at home in their private concerns, cannot well be called out, or be depended upon; that we must have a select militia . . . . These corps, not much unlike regular troops, will ever produce an inattention to the general militia; and the consequence has ever been, and always must be, that the substantial men, having families and property, will generally be without arms, without knowing the use of them, and defenceless; whereas, to preserve liberty, it is essential that the whole body of the people always possess arms, and be taught alike, especially when young, how to use them[.]<sup>229</sup>

Indeed, as arguably the most influential Antifederalist, George Mason, argued at the Virginia Convention, one method of effectively disarming the people that had historically been used was to allow the militia to fall into disuse.<sup>230</sup> Mason reminded the convention that a former royal governor of Pennsylvania, Sir William Keith, proposed such a plan to the British Parliament “when the resolution for enslaving

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<sup>228</sup> *Id.* at 837–38.

<sup>229</sup> Federal Farmer, *Letter XVIII*, Jan. 25, 1788, reprinted in 20 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 1073 (John P. Kaminski et al. eds., 2004). Federal Farmer repeatedly stated that the militia is the general population. *See id.* at 1072 (“militia, when properly formed, are in fact the people themselves”); *id.* (“the militia shall always . . . include, according to the past and general usage of the states, all men capable of bearing arms”); *id.* at 1073 (“the militia are the people”).

<sup>230</sup> 10 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 1270–71 (John P. Kaminski et al. eds., 1993).

America was formed in Great-Britain.”<sup>231</sup> According to Keith, it was not “good [p]olicy, to accustom all the able men in the Colonies to be well exercised in Arms.”<sup>232</sup> It was “more advisable, to keep up a small, regular Force in each Province” so that “in case of a War, or Rebellion, the whole of the regular Troops on the Continent, might without Loss of time be united or distributed at Pleasure.”<sup>233</sup> Accordingly, as Mason put it, the British had decided that “to disarm the people . . . was the best and most effectual way to enslave them,” and that it was best “not do it openly; but to weaken [the Americans] and let them sink gradually, by totally disusing and neglecting the militia.”<sup>234</sup> Mason was convinced that a standing army combined with an untrained populace would surely result in despotism: “When against a regular and disciplined army, yeomanry are the only defence—yeomanry unskilful and unarmed, what chance is there for preserving freedom?”<sup>235</sup> Mason’s arguments were consistent with remarks he made during a speech near the start of the Revolutionary War, in which he proclaimed that the people must be “introduce[d] to the use of arms and discipline” to best “act in defence of their invaded liberty.”<sup>236</sup>

### C. Ratifying the Second Amendment

The necessity for a trained populace was reflected in proposed declarations of rights, and ultimately, the Second Amendment. Virginia’s proposed arms guarantee, which originated with Mason, provided “[t]hat the people have a right to keep and bear arms: that a well regulated militia composed of the body of the people trained to arms, is the proper, natural and safe defence of a free State.”<sup>237</sup> The second clause used the same language as Virginia’s 1776 declaration of rights, which Mason wrote.<sup>238</sup>

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<sup>231</sup> *Id.* at 1271.

<sup>232</sup> WILLIAM KEITH, A SHORT DISCOURSE, ON THE PRESENT STATE OF THE COLONIES IN AMERICA, WITH RESPECT TO GREAT BRITAIN (1728), *reprinted in* 6 THE AMERICAN MUSEUM: OR REPOSITORY OF ANCIENT AND MODERN FUGITIVE PIECES, &C. PROSE AND POETICAL 169 (Mathew Carey ed., 1789).

<sup>233</sup> *Id.*

<sup>234</sup> 10 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION, *supra* note 230, at 1271.

<sup>235</sup> *Id.*

<sup>236</sup> 1 KATE MASON ROWLAND, THE LIFE OF GEORGE MASON 430 (1892).

<sup>237</sup> 37 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 253 (John P. Kaminski et al. eds., 2020). Virginia’s proposed Bill of Rights was nearly identical to the proposals prepared by Mason at the Virginia convention, many of which—including the arms provision—was based on Virginia’s 1776 Declaration of Rights that Mason drafted. J. Gordon Hylton, *Virginia and the Ratification of the Bill of Rights 1789–1791*, 25 U. RICH. L. REV. 433, 437, 439 (1991).

<sup>238</sup> 37 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION, *supra* note 237, at 113 (“That a well regulated militia, composed of the body of the people, trained to arms, is the proper, natural, and safe defence of a free State.”).

North Carolina proposed the same language as Virginia.<sup>239</sup> New York's proposal was also based on Mason's language, except it substituted "the body of the people trained to arms" with "the body of the People capable of bearing Arms."<sup>240</sup> Additionally, Rhode Island proposed New York's language.<sup>241</sup>

Future vice-president Elbridge Gerry argued that he preferred the "trained to arms" language because it would "furnish a greater certainty" that a competent militia would be maintained.<sup>242</sup> Regardless, the objective of each proposal was to ensure that the populace would be familiar with arms. This objective was also reflected in the final wording of the Second Amendment, which provided that "A well regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed."<sup>243</sup> "Well regulated" means trained and disciplined, and the militia includes the body of the people. The body of the people being effective with arms was understood as the best way to protect the state, and the best way to protect the people's liberties from a tyrannical state.

Antifederalist Samuel Nasson emphasized both of these benefits during the constitutional debates. In a speech at the Massachusetts Convention, Nasson praised the people's ability to defend themselves: "What occasion have we for standing armies? We fear no foe—If one should come upon us, we have a militia, which is our bulwark. Let Lexington witness that we have the means of defence among ourselves."<sup>244</sup> The following year, he urged his friend and Federalist congressman George Thatcher to ratify what became the Second Amendment by explaining:

. . . you know to learn the Use of arms is all that can Save us from a forighn foe that may attempt to subdue us, for if we keep up the Use the-of arms and become well acquainted with them we Shall allway be able to look them in the face that arise up against us.<sup>245</sup>

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<sup>239</sup> *Id.* at 266 ("That the people have a right to keep and bear arms; that a well regulated militia, composed of the body of the people, trained to arms, is the proper, natural and safe defence of a free State.").

<sup>240</sup> *Id.* at 257 ("That the People have a right to keep and bear Arms; that a well regulated Militia, including the body of the People *capable of bearing Arms*, is the proper, natural and safe defence of a free State.") (italics in original).

<sup>241</sup> *Id.* at 273 ("That the people have a right to keep and bear arms; that a well regulated militia, including the body of the people capable of bearing Arms, is the proper, natural and safe defence of a free state.").

<sup>242</sup> *Id.* at 403.

<sup>243</sup> U.S. CONST. amend. II.

<sup>244</sup> 6 DOCUMENTARY HISTORY OF THE RATIFICATION OF THE CONSTITUTION 1400 (John P. Kaminski et al. eds., 2000).

<sup>245</sup> Letter from Samuel Nasson to George Thatcher, July 9, 1789, in THE COMPLETE BILL OF RIGHTS 296 (Neil H. Cogan ed., 2d. ed. 2015).

*D. Post-Ratification Interpretations of the Second Amendment*

Comments made directly after the Second Amendment was drafted and throughout the following century make clear that firearms training was an important part of the right “to keep and bear arms.”<sup>246</sup>

The Bill of Rights was submitted to the states for consideration on September 25, 1789.<sup>247</sup> By the time of President Washington’s first address to a joint session of Congress on January 8, 1790, New Jersey, Maryland, and North Carolina had ratified the proposed Amendments.<sup>248</sup> Illustrating that the belief in training was as strong as ever, Washington used his address to remind Americans that “a free people ought not only to be armed, but disciplined.”<sup>249</sup> The same point was made during debates in the first Congress. For example, on December 17, 1790—at which point nine of the required eleven states had ratified the Bill of Rights—the House of Representatives discussed the people’s ability and willingness to defend themselves.<sup>250</sup> Representative James Jackson declared “that every citizen was not only entitled to carry arms, but also in duty bound to perfect himself in the use of them, and thus be capable of defending his country.” To Jackson, one could not credibly contend “that the whole body of the people ought not to be armed, and properly trained.”<sup>251</sup>

Vermont’s most influential founder was Ira Allen. From 1776 to 1786, “few if any state papers of Vermont were issued that [Ira] did not prepare or assist in preparing.”<sup>252</sup> Allen’s writings are filled with references to the firearms he carried and used for self-defense, hunting, and target shooting. For example, in 1772 he casually notes a shooting competition between his brother, Ethan Allen, and a “Mr. Peck,” when they “lodged at Peck’s camp” for an evening,

Mr. Peck and my brother in the course of the evening had a high banter, and some bets laid for shooting at mark next morning. . . . In the gray of the morning, Mr. Peck and my brother

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<sup>246</sup> U.S. CONST. amend. II.

<sup>247</sup> *The Bill of Rights: A Transcription*, NAT’L ARCHIVES, <https://www.archives.gov/founding-docs/bill-of-rights-transcript> [<https://perma.cc/W2UZ-RJVA>] (last visited Oct. 18, 2022).

<sup>248</sup> *This Day in History* | June 21, HIST. (Nov. 24, 2009), <https://www.history.com/this-day-in-history/u-s-constitution-ratified> [<https://perma.cc/BT5M-J8V5>] (last visited Oct. 18, 2022).

<sup>249</sup> 1 JOURNAL OF THE SECOND SESSION OF THE SENATE OF THE UNITED STATES OF AMERICA, BEGUN AND HELD AT THE CITY OF NEW YORK, JANUARY 4TH, 1790; AND IN THE FOURTEENTH YEAR OF THE INDEPENDENCE OF THE SAID STATES 6 (1820).

<sup>250</sup> *James Madison and the Bill of Rights*, BILL RTS. INST., <https://billofrightsinstitute.org/essays/james-madison-and-the-bill-of-rights> [<https://perma.cc/3FLM-NCTN>] (last visited Oct. 18, 2022).

<sup>251</sup> 14 DOCUMENTARY HISTORY OF THE FIRST FEDERAL CONGRESS: DEBATES IN THE HOUSE OF REPRESENTATIVES: THIRD SESSION, DECEMBER 1790–MARCH 1791, at 95 (1996).

<sup>252</sup> 1 JAMES BENJAMIN WILBUR, IRA ALLEN: FOUNDER OF VERMONT, 1751–1814, at 87 (1928).

were up and preparing their guns, &c, and soon began to fire. Some I heard, and others sleep prevented the notice of. They continued their sport till the sun was two hours high.<sup>253</sup>

The activity was so common, it seems, that Ira Allen slept through it.<sup>254</sup> In 1796, Allen traveled to France to purchase 20,000 muskets and twenty-four field pieces for Vermont's militia.<sup>255</sup> While being shipped to America, the arms were seized by the British, who suspected that Allen was planning a revolt against British Canada. While defending himself in Britain's Court of Admiralty, Allen explained that he intended to distribute the arms across Vermont.<sup>256</sup> In doing so, he elucidated his understanding of his right to keep and bear arms in America: "Government have nothing to fear from its Militia. . . . arms and military stores are free merchandize, so that any who have property and choose to sport with it, may turn their gardens into parks of artillery, and their houses into arsenals, without danger to Government."<sup>257</sup>

In his 1825 "influential treatise," William Rawle, "a prominent lawyer who had been a member of the Pennsylvania Assembly that ratified the Bill of Rights,"<sup>258</sup> described how the militia's usefulness derived from the people being accustomed to using arms: "In a people permitted and accustomed to bear arms, we have the rudiments of a militia, which properly consists of armed citizens, divided into military bands, and instructed at least in part, in the use of arms for the purposes of war."<sup>259</sup>

As a Supreme Court Justice, Joseph Story published a popular treatise on the Constitution in 1833.<sup>260</sup> Regarding the Second Amendment, Story noted that "[t]he right of the citizens to keep and bear arms has justly been considered, as the palladium of the liberties of a republic."<sup>261</sup> But Story expressed concern about "a growing indifference" to the right among the people.<sup>262</sup> He worried that the people would neglect their arms and undermine the founders' intent. "There is certainly no small danger, that indifference may lead to disgust, and disgust to contempt; and thus gradually undermine all the protection intended by this clause of our national bill of rights."<sup>263</sup>

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<sup>253</sup> *Id.* at 28.

<sup>254</sup> *Id.*

<sup>255</sup> STEPHEN P. HALBROOK, A RIGHT TO BEAR ARMS: STATE AND FEDERAL BILL OF RIGHTS AND CONSTITUTIONAL GUARANTEES 38 (1989).

<sup>256</sup> IRA ALLEN, PARTICULARS OF THE CAPTURE OF THE OLIVE BRANCH, LADEN WITH A CARGO OF ARMS 403 (1798).

<sup>257</sup> *Id.* at 403–04.

<sup>258</sup> *District of Columbia v. Heller*, 554 U.S. 570, 607 (2008).

<sup>259</sup> RAWLE, *supra* note 221, at 140.

<sup>260</sup> *The Idea of the Senate*, U.S. SENATE, <https://www.senate.gov/about/origins-foundations/idea-of-the-senate/1833Story.htm> [<https://perma.cc/7TZY-658R>] (last visited Oct. 18, 2022).

<sup>261</sup> 3 JOSEPH STORY, COMMENTARIES ON THE CONSTITUTION OF THE UNITED STATES 746 (1833).

<sup>262</sup> *Id.*

<sup>263</sup> *Id.* at 747.

The “most famous” legal scholar of the nineteenth century was “the judge and professor Thomas Cooley, who wrote a massively popular 1868 *Treatise on Constitutional Limitations*.”<sup>264</sup> According to Cooley, “to bear arms implies something more than the mere keeping; it implies the learning to handle and use them in a way that makes those who keep them ready for their efficient use; in other words, it implies the right to meet for voluntary discipline in arms[.]”<sup>265</sup> Echoing the founders of the previous century, Cooley explained that “[t]he alternative to a standing army is ‘a well-regulated militia,’ but this cannot exist unless the people are trained to bearing arms.”<sup>266</sup> Thus, as the Supreme Court asserted, “Cooley understood the right not as connected to militia service, but as securing the militia by ensuring a populace familiar with arms.”<sup>267</sup>

That same year—which was also the year the Fourteenth Amendment was ratified—John Norton Pomeroy explained that the purpose of the Second Amendment is

to secure a well-armed militia. . . . But a militia would be useless unless the citizens were enabled to exercise themselves in the use of warlike weapons. To preserve this privilege, and to secure to the people the ability to oppose themselves in military force against the usurpations of government, as well as against enemies from without, that government is forbidden by any law or proceeding to invade or destroy the right to keep and bear arms. . . . The clause is analogous to the one securing the freedom of speech and of the press. Freedom, not license, is secured; the fair use, not the libellous abuse, is protected.<sup>268</sup>

Benjamin Abbott’s post-Fourteenth Amendment treatise echoed these sentiments. First, addressing the public benefit of the right to bear arms, Abbott stressed that “[s]ome general knowledge of firearms is important to the public welfare; because it would be impossible, in case of war, to organize promptly an efficient force of volunteers unless the people had some familiarity with weapons of war.”<sup>269</sup> Then, focusing on the right secured by the Second Amendment, Abbott added that “The Constitution secures the right of the people to keep and bear arms. No doubt, a citizen who keeps a gun or pistol under judicious precautions, practises in safe

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<sup>264</sup> *District of Columbia v. Heller*, 554 U.S. 570, 618 (2008).

<sup>265</sup> COOLEY, *THE GENERAL PRINCIPLES OF CONSTITUTIONAL LAW*, *supra* note 10, at 271.

<sup>266</sup> THOMAS M. COOLEY, *A TREATISE ON THE CONSTITUTIONAL LIMITATIONS WHICH REST UPON THE LEGISLATIVE POWER OF THE STATES OF THE AMERICAN UNION* 350 (1868).

<sup>267</sup> *Heller*, 554 U.S. at 618.

<sup>268</sup> JOHN NORTON POMEROY, *AN INTRODUCTION TO THE CONSTITUTIONAL LAW OF THE UNITED STATES* 152–53 (1868).

<sup>269</sup> BENJAMIN VAUGHAN ABBOTT, *JUDGE AND JURY: A POPULAR EXPLANATION OF LEADING TOPICS IN THE LAW OF THE LAND* 333 (1880).



places the use of it, and in due time teaches his sons to do the same, exercises his individual right.”<sup>270</sup> Later, Abbott reiterated that “[a]s to guns and pistols, then, the citizen who practises with them is in the exercise of a constitutional right,”<sup>271</sup> because “[o]ne has a general right to practise with firearms.”<sup>272</sup>

#### V. RESTRICTIONS ON SHOOTING DURING THE COLONIAL AND FOUNDING ERAS

No law prohibited firearms training in seventeenth- or eighteenth-century America, which is significant considering how common shooting was. The restrictions that existed were either wartime measures enacted to conserve gunpowder or limitations on shooting at particular times and places. None were intended to limit the act of training itself. Instead, some included training exceptions.

##### *A. Wartime Measures to Conserve Gunpowder*

Virginia, in 1623, provided that “no commander of any plantation do either himselfe or suffer others to spend powder unnecessarily in drinking or entertainment.”<sup>273</sup> This law was one of many ensuring that the colonists were always properly armed after an Indian massacre killed 347 of them in 1622.<sup>274</sup> For example, another law passed the same day required that “every dwelling house shall be pallizaded in for defence against the Indians.”<sup>275</sup> The powder conservation law was restated in 1631<sup>276</sup> and 1632.<sup>277</sup>

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<sup>270</sup> *Id.*

<sup>271</sup> *Id.* at 334.

<sup>272</sup> *Id.* at 335.

<sup>273</sup> 1 THE STATUTES AT LARGE: BEING A COLLECTION OF ALL THE LAWS OF VIRGINIA FROM THE FIRST SESSION OF THE LEGISLATURE, IN THE YEAR 1619, at 127 (William Waller Hening ed., 1823).

<sup>274</sup> [O]n the 22d of *March*, 1622, a little before noon, at a Time when our men were all at Work abroad in their plantations, disperst and unarm’d. This Hellish Contrivance was to take Effect upon all the several Settlements at one and the same instant. . . . The very Morning of the Massacre, they came freely and unarm’d among them, eating with them, and behaving themselves with the same Freedom and Friendship as formerly, till the very Minute they were to put their Plot into Execution. Then they fell to Work all at once everywhere, knocking the *English* unawares on the Head, some with their Hatchets, which they call *Tommahawks*, others with the Hoes and Axes of the *English* themselves, shooting at those who escap’d the Reach of their Hands; sparing neither Age nor Sex, but destroying Man, Woman, and Child, according to their cruel Way of leaving none behind to bear Resentment.

BEVERLEY, *supra* note 116, at 40–41.

<sup>275</sup> 1 THE STATUTES AT LARGE: BEING A COLLECTION OF ALL THE LAWS OF VIRGINIA FROM THE FIRST SESSION OF THE LEGISLATURE, IN THE YEAR 1619, *supra* note 273, at 127.

<sup>276</sup> *Id.* at 173.

<sup>277</sup> *Id.* at 198.



During King Philip's War, in 1675 Plymouth Colony fined "whosoever shall shoot of any gun on any unnessesarie occation, or att any game whatsoever, except att an Indian or a woolfe . . . till further libertie shalbe given."<sup>278</sup> During King William's War fifteen years later, after French and Indian forces massacred sixty-two colonists in Schenectady, New York, neighboring Albany passed a powder-conservation law. Because "diverse persons dayly wast powder which is of such necessary use for defence of this City and County of Albany," anyone who "burne any powder unlesse to kill provision" was fined "upon of paine of paying for every shot, or discharging of Gun or Pistoll."<sup>279</sup>

### *B. Time and Place Limitations*

In 1642, along with forbidding travel, Virginia forbade shooting on the Sabbath, "unles it shall be for the safety of his or their plantations or corne fields or for defence against the Indians."<sup>280</sup> Virginia passed another similar law in 1657.<sup>281</sup> Rhode Island followed in 1679, prohibiting the "[s]hooting out of any gun . . . more then Necessety Requireth" on the Sabbath.<sup>282</sup> Pennsylvania, in 1794, outlawed "any unlawful game, hunting, shooting, sport or diversion" on "the Lord's day, commonly called Sunday."<sup>283</sup>

Most time and place restrictions limited shooting in populated areas.<sup>284</sup> In 1713, Massachusetts made it illegal "to Discharge or Fire off any Gun upon Boston Neck, within Ten Rods of the Road or High-way leading over the same."<sup>285</sup> That same

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<sup>278</sup> THE BLUE LAWS OF NEW HAVEN COLONY, USUALLY CALLED BLUE LAWS OF CONNECTICUT; QUAKER LAWS OF PLYMOUTH AND MASSACHUSETTS; BLUE LAWS OF NEW YORK, MARYLAND, VIRGINIA, AND SOUTH CAROLINA 50 (An Antiquarian ed., 1838).

<sup>279</sup> 2 THE DOCUMENTARY HISTORY OF THE STATE OF NEW YORK 124 (E. B. O'Callaghan ed., 1849).

<sup>280</sup> 1 LAWS OF VIRGINIA, 1642–1643, ACT XXXV.

<sup>281</sup> 1 THE STATUTES AT LARGE: BEING A COLLECTION OF ALL THE LAWS OF VIRGINIA FROM THE FIRST SESSION OF THE LEGISLATURE, IN THE YEAR 1619, *supra* note 273, at 434.

<sup>282</sup> LAWS AND ACTS OF HER MAJESTIES COLONY OF RHODE ISLAND, AND PROVIDENCE PLANTATIONS MADE FROM THE FIRST SETTLEMENT IN 1636 TO 1705, at 31 (1896).

<sup>283</sup> 3 LAWS OF THE COMMONWEALTH OF PENNSYLVANIA, FROM THE FOURTEENTH DAY OF OCTOBER, ONE THOUSAND SEVEN HUNDRED, TO THE TWENTIETH DAY OF MARCH, ONE THOUSAND EIGHT HUNDRED AND TEN 178 (1810) ("if any person . . . on the Lord's Day, commonly called Sunday . . . shall use or practice any unlawful game, hunting, shooting, sport or diversion whatsoever . . . every such person, so offending, shall, for every such offense forfeit and pay four dollars. . .").

<sup>284</sup> *See also* ABBOTT, *supra* note 269, at 333–34 (A person "exercises his individual right" when he "practises in safe places," but that is a "very different habit" than "firing at random with them [guns] upon city sidewalks").

<sup>285</sup> THE CHARTER GRANTED BY THEIR MAJESTIES KING WILLIAM AND QUEEN MARY, TO THE INHABITANTS OF THE PROVINCE OF THE MASSACHUSETTS BAY IN NEW-ENGLAND 227 (1726).

year, Philadelphia forbade “firing a gun without a license” in the city.<sup>286</sup> In 1721, Philadelphia again made it illegal to “fire any gun or other firearms . . . within the city of Philadelphia . . . without the governor’s special license for the same.”<sup>287</sup> It seems that these licenses were expected to be issued liberally, as an additional statute passed the same day forbade shooting birds in the streets of Philadelphia.<sup>288</sup> Such a law would have been unnecessary if virtually everyone was intended to be prohibited from shooting in the city. In 1731, the town of Newport, Rhode Island forbade shooting in “the Streets or Lanes of any Town . . . or in any Tavern of the same, after Dark, on any Night whatsoever.”<sup>289</sup>

A 1746 Massachusetts law provided that “no person or persons, from and after the publication of this act, shall presume to discharge or fire off any cannon laden with shot, from any wharfe or vessel in that part of the harbour of [Boston] which is above the castle.”<sup>290</sup> The following section provided that “no personal shall . . . discharge any gun or pistol, charged with shot or ball, in the town of Boston (the islands thereto being excepted), or in any part of the harbour between the castle and said town.”<sup>291</sup> Reflecting the value placed on target practice, however, the law clarified that it

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<sup>286</sup> 2 THE STATUTES AT LARGE OF PENNSYLVANIA FROM 1682 TO 1801, at 551 (Clarence M. Busch ed., 1896).

<sup>287</sup> 3 THE STATUTES AT LARGE OF PENNSYLVANIA FROM 1682 TO 1801, at 253 (Clarence M. Busch ed., 1896).

<sup>288</sup> *Id.* at 256 (“[N]o person whatsoever shall presume to shoot at or kill with a firearm any pigeon, dove, partridge, or other fowl in the open streets of the city of Philadelphia, or in the gardens, orchards and inclosures adjoining upon and belonging to any of the dwelling houses within the limits of the said city.”).

In 1652, the Dutch colony of New Amsterdam prohibited bird hunting in city limits, but did not outlaw other types of shooting:

Whereas, many guns are daily discharged and fired at Partridges and other game within the jurisdiction of this city *New Amsterdam* and in the vicinity of the Fort, by which firing People or Cattle might perhaps be struck and injured, against which practise complaints have already been made. Therefore the Honorable Director General and Council, in order to prevent accidents, expressly forbid and interdict all persons henceforward firing within the jurisdiction of this city or about the Fort, with any guns at Partridges or other Game that may be chance fly within the city.

LAWS AND ORDINANCES OF NEW NETHERLAND, 1638–1674, at 138 (E. B. O’Callaghan ed., 1868).

<sup>289</sup> The CHARTER, GRANTED BY HIS MAJESTY, KING CHARLES II, TO THE GOVERNOR AND COMPANY OF THE ENGLISH COLONY OF RHODE-ISLAND AND PROVIDENCE-PLANTATIONS, IN NEW ENGLAND, IN AMERICA 120 (1744).

<sup>290</sup> 3 THE ACTS AND RESOLVES, PUBLIC AND PRIVATE, OF THE PROVINCE OF MASSACHUSETTS BAY 306 (1878).

<sup>291</sup> *Id.*

[S]hall not be so construed or understood as to prevent soldiers, in their common-training days, with the leave and by order of the commission officers of the company to which they belong, or other persons, at other times, with the leave of one or more of the field-officers of the regiment in Boston, from firing at a mark or target[t], for the exercise of their skill and judgment, provided it be done at the lower end of the common; nor from firing at a mark, from the several batteries in the town of Boston, with the leave of the captain-general, and nowhere else.<sup>292</sup>

In 1750, Pennsylvania broadened Philadelphia’s fire prevention law requiring people to acquire a license to “fire any gun or other fire-arm” in the city by applying it to each “county town, or . . . other town or borough, in this province” that is “built and settled.”<sup>293</sup> Another section of the law forbade gambling on shooting matches, and made clear that shooting matches—and thus firearms training in general—were unaffected by either the 1750 licensing law, or, therefore, the 1721 licensing law.<sup>294</sup> Specifically, the 1750 gambling law forbade “any person” to “promote or be concerned in any shooting match for any plate, prize, sum of money or other thing of value whatsoever.”<sup>295</sup> The following section of the law forbade the distribution of “strong liquors” to anyone “attending” a shooting match.<sup>296</sup> Shooting matches were apparently common and popular events.

In 1785, New York limited shooting during New Year celebrations by forbidding “any person” to “fire or discharge any gun . . . within a quarter of a mile of any building,” on “the eve of the last day of December, and the first and second days of January.”<sup>297</sup>

In 1790, Ohio made it unlawful to fire a gun within “one-quarter of a mile from the nearest building.”<sup>298</sup> Two years later, Elizabethtown, Maryland made it unlawful

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<sup>292</sup> *Id.* This law was revived three times within the following decade. *Id.* at 488, 574, 755.

<sup>293</sup> 5 THE STATUTES AT LARGE OF PENNSYLVANIA FROM 1682 TO 1801, at 108–09 (James T. Mitchell & Henry Flanders eds., 1898).

<sup>294</sup> *Id.* at 109.

<sup>295</sup> *Id.*

<sup>296</sup> *Id.* at 110.

<sup>297</sup> 2 LAWS OF THE STATE OF NEW YORK PASSED AT THE SESSIONS OF THE LEGISLATURE HELD IN THE YEARS 1785, 1786, 1787, AND 1788, INCLUSIVE 152 (1886). A Dutch colony in 1655, New Netherland (which later became part of New York), likewise targeted celebratory shooting, “expressly forbid[ding] from this time forth all firing of Guns, or planting of May poles within this Province of *New Netherland*, on New Years or May days” because “experience hath demonstrated and taught that, besides an unnecessary waste of powder, much Drunkenness and other insolence prevail on New Years and May days, by firing of Guns, planting May poles, and carousing.” LAWS AND ORDINANCES OF NEW NETHERLAND, 1638–1674, *supra* note 288, at 205.

<sup>298</sup> 1 THE STATUTES OF OHIO AND OF THE NORTHWESTERN TERRITORY, ADOPTED OR ENACTED FROM 1788 TO 1833, INCLUSIVE 106 (Salmon P. Chase ed., 1833).

to “fire any gun or pistol in the said town.”<sup>299</sup> Notably, the Ohio law included exceptions for training as part of militia service: “nothing herein contained shall be construed or extend to prevent the necessary military exercise, evolutions and firings of, or the discharging of cannon or small arms, by any soldiers or troops. . . .”<sup>300</sup>

In sum, considering what a popular activity shooting was, few regulations throughout the colonial and founding eras restricted when or where it could occur. The earlier regulations were wartime measures designed to conserve gunpowder when powder was scarce and difficult to produce in the colonies. Most regulations were time and place restrictions, for example Virginia, Pennsylvania, and Rhode Island forbade shooting on the Sabbath,<sup>301</sup> and New York targeted celebratory shooting.<sup>302</sup> Shooting was limited in certain populated areas of Pennsylvania, Massachusetts, and Ohio, as well as in a single town in both Rhode Island and Maryland.<sup>303</sup> No regulation intended to restrict the activity of target shooting itself, and even the relatively restrictive laws had training exceptions or allowed for shooting with a license. No pre-1800 law regulated controlled target practice.

## VI. MODERN COURT DECISIONS ON THE RIGHT TO TRAIN

### A. *The Supreme Court*

#### 1. *District of Columbia v. Heller*

In *District of Columbia v. Heller*, the Supreme Court provided its “first in-depth examination of the Second Amendment.”<sup>304</sup> *Heller* involved a challenge to a prohibition on handguns, a prohibition on assembled and functional firearms inside the home, and a prohibition on carrying firearms (even in the home) without a license.<sup>305</sup>

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<sup>299</sup> 2 THE LAWS OF MARYLAND TO WHICH ARE PREFIXED THE ORIGINAL CHARTER WITH AN ENGLISH TRANSLATION, THE BILL OF RIGHTS AND CONSTITUTION OF THE STATE ch. LII (William Kilty ed., 1800). The book is divided by year; the reference here is to chapter 52 of the year 1792.

<sup>300</sup> See 1 THE STATUTES OF OHIO AND OF THE NORTHWESTERN TERRITORY ADOPTED OR ENACTED FROM 1788 TO 1833, INCLUSIVE, *supra* note 298, at 106.

<sup>301</sup> See *supra* Section V.B, noting the prohibition of shooting on the Sabbath in these three states.

<sup>302</sup> See 1 THE STATUTES OF OHIO AND OF THE NORTHWESTERN TERRITORY, ADOPTED OR ENACTED FROM 1788 TO 1833, INCLUSIVE, *supra* note 298 and accompanying text, noting the prohibition on celebratory shooting around New Year’s Day in New York, as well as similar prohibitions in the preceding New Netherland colony.

<sup>303</sup> See *supra* Section V.B, noting that Pennsylvania law forbade shooting within the City of Philadelphia, Massachusetts law forbade shooting in mainland Boston, Ohio law forbade shooting near a building, Rhode Island law forbade shooting in the City of Newport, and Maryland law forbade shooting in the Town of Elizabethtown.

<sup>304</sup> 554 U.S. 570, 635 (2008).

<sup>305</sup> *Id.* at 574–75.

The *Heller* Court analyzed the Second Amendment’s text, using history and tradition to inform its original meaning, and held that the Second Amendment protects “the individual right to possess and carry weapons in case of confrontation.”<sup>306</sup> All three prohibitions, therefore, were held to violate the Second Amendment.<sup>307</sup>

The Court noted that “[t]he Second Amendment is naturally divided into two parts: its prefatory clause and its operative clause. The former does not limit the latter grammatically,” the Court explained, “but rather announces a purpose.”<sup>308</sup> The “prefatory clause,” therefore, “does not limit or expand the scope of the operative clause,” but it can “resolve an ambiguity in the operative clause” because “[l]ogic demands that there be a link between the stated purpose and the command.”<sup>309</sup>

After analyzing each word and phrase of the operative clause, the Court concluded that “they guarantee the individual right to possess and carry weapons in case of confrontation.”<sup>310</sup> Returning to the prefatory clause, to ensure that it fits with the Court’s interpretation of the operative clause, the Court found that “[i]t fits perfectly, once one knows the history that the founding generation knew.”<sup>311</sup> Specifically, “the way tyrants had eliminated a militia consisting of all the able-bodied men . . . not by banning the militia but simply by taking away the people’s arms, enabling a select militia or standing army to suppress political opponents.”<sup>312</sup>

A populace allowed to possess and carry arms but forbidden to practice with them would be nearly as useless against a tyrannical government as an unarmed populace.<sup>313</sup> As explained in Section II.B, this was a grave concern among the founding generation. Indeed, *Heller* found “many reasons why the militia was thought to be ‘necessary to the security of a free State’”: for “repelling invasions and suppressing insurrections,” to “render[] large standing armies unnecessary,” and because “when the able-bodied men of a nation are trained in arms and organized, they are better able to resist tyranny.”<sup>314</sup> None of these purposes can be served by an untrained populace. It is thus no surprise that *Heller* found the adjective “well-regulated” in the Second Amendment’s text as “impl[ying] nothing more than the imposition of proper discipline and training.”<sup>315</sup> An armed *and trained* body of the people, not just an armed body, is necessary. If ensuring a well-trained populace was

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<sup>306</sup> *Id.* at 592.

<sup>307</sup> *Id.* at 635.

<sup>308</sup> *Id.* at 577.

<sup>309</sup> *Id.* at 577–78.

<sup>310</sup> *Id.* at 592.

<sup>311</sup> *Id.* at 598.

<sup>312</sup> *Id.* The Court added that “This is what had occurred in England that prompted codification of the right to have arms in the English Bill of Rights.” *Id.*

<sup>313</sup> *Id.* at 599 (“[T]he threat that the new Federal Government would destroy the citizens’ militia by taking away their arms was the reason that right—unlike some other English rights—was codified in a written Constitution.”).

<sup>314</sup> *Id.* at 597–98.

<sup>315</sup> *Id.* at 597. The Court cited Rawle and Virginia’s declaration of rights, discussed *supra* notes 213, 221.

the “purpose for which the right was codified,” as *Heller* says, then training must be protected by the right.<sup>316</sup>

The Court’s conclusion that self-defense and hunting are protected rights further supports the right to train.<sup>317</sup> Neither self-defense nor hunting can reliably be accomplished without adequate training. An incompetent shooter makes for an unethical hunter and an even worse defender of life.<sup>318</sup>

Notably, *Heller* relied on Story, Tucker, Sharp, Jefferson, Abbott, Rawle, Cooley, Sumner, Pomeroy, and the Virginia Declaration of Rights.<sup>319</sup> All of these sources, as discussed above, support the right to train with arms.

## 2. *Luis v. United States*

In *Luis v. United States*, a government freeze on a defendant’s untainted assets prevented him from hiring counsel and was therefore held to violate the Sixth Amendment. In a concurring opinion, Justice Thomas explained that “[c]onstitutional rights . . . implicitly protect those closely related acts necessary to their exercise.”<sup>320</sup> He provided several examples, including that the right to keep and bear arms implicitly protects the right to train with them because it would otherwise be ineffective: “The right to keep and bear arms, for example, ‘implies a corresponding right to obtain the bullets necessary to use them,’ and ‘to acquire and maintain proficiency in their use.’ . . . Without protection for these closely related rights, the Second Amendment would be toothless.”<sup>321</sup>

## 3. *New York State Rifle & Pistol Association v. City of New York*

The plaintiffs in *New York State Rifle & Pistol Association v. City of New York* sued New York City and the New York Police Department–License Division

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<sup>316</sup> *Id.* at 599.

<sup>317</sup> *Id.* (“The prefatory clause does not suggest that preserving the militia was the only reason Americans valued the ancient right; most undoubtedly thought it even more important for self-defense and hunting.”).

<sup>318</sup> The holding regarding what arms the Second Amendment protects may also be informative. The Court held that “the sorts of weapons protected [a]re those ‘in common use at the time.’” *Id.* at 627 (quoting *United States v. Miller*, 307 U.S. 174, 179 (1939)). Applied to training, this may suggest that the right to train includes practice with common arms and at their effective range.

<sup>319</sup> *Id.* at 593–97, 602, 606–10, 616–19, 626, 641, and 659.

<sup>320</sup> *Luis v. United States*, 136 S. Ct. 1083, 1097 (2016) (Thomas, J., concurring) (first quoting *Jackson v. City of San Francisco*, 746 F.3d 953 (9th Cir. 2014); then quoting *Ezell v. City of Chicago*, 651 F.3d 684, 704 (7th Cir. 2011)).

<sup>321</sup> *Id.* at 1097 (Thomas, J., concurring) (first quoting *Jackson v. City of San Francisco*, 746 F.3d 953 (9th Cir. 2014); then quoting *Ezell v. City of Chicago*, 651 F.3d 684, 704 (7th Cir. 2011)).



because their licensing scheme forbade the plaintiffs from transporting handguns to shooting ranges, target competitions, and other target practice outside of New York City.<sup>322</sup> Holders of a “premises license,” such as the plaintiffs, could only take their handguns “directly to and from an authorized small arms range/shooting club” located in New York City.<sup>323</sup> When the case was filed, only seven authorized ranges existed in the entire city of over eight million people—or less than one range per million residents.<sup>324</sup>

The Second Circuit applied a two-part test in which it first asks whether the challenged law burdens conduct protected by the Second Amendment as historically understood, and if so, then applies some level of tiered scrutiny—the level of scrutiny depending on the severity of the burden. But in this case, the Court skipped the historical question entirely, announcing that “[w]e need not decide whether” a restriction on training burdens the right, because even if it does, “the Rule passes constitutional muster under intermediate scrutiny.”<sup>325</sup>

Having declined to consider the historical understanding of the right, it is unsurprising that the Second Circuit rejected the plaintiffs’ arguments that “firearms practice is itself a core Second Amendment right, and that even minimal regulation of firearms training must survive heightened scrutiny.”<sup>326</sup> Rather, the Court found heightened scrutiny appropriate only when “regulations amounting to a ban (either explicit or functional) on obtaining firearms training and practice substantially burden the core right to keep and use firearms in self-defense in the home.”<sup>327</sup>

As for New York City’s restriction, the Court determined that it “does not approach the core area of protection,” and could not say for sure that it substantially burdened any Second Amendment rights.<sup>328</sup> Instead, the court applied intermediate scrutiny under a mere assumption that rights were burdened.<sup>329</sup>

The Second Circuit upheld the training restriction under intermediate scrutiny based solely on an affidavit by Andrew Lunetta, the former Commander of the License Division. Lunetta claimed that “taking a licensed handgun to . . . a shooting competition outside the City . . . constitutes a potential threat to public safety” because lawful gun owners “are just as susceptible as anyone else to stressful

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<sup>322</sup> N.Y. State Rifle & Pistol Ass’n v. City of New York, 883 F.3d 45, 52, 54 (2d Cir. 2018). Additionally, one plaintiff sought to transport his handgun from New York City to his second home in upstate New York. *Id.*

<sup>323</sup> *Id.* at 53.

<sup>324</sup> *Id.*

<sup>325</sup> *Id.* at 55 (brackets and quotations omitted).

<sup>326</sup> *Id.* at 58.

<sup>327</sup> *Id.* The court reiterated that heightened scrutiny was appropriate for such training bans, not “because live-fire target shooting is *itself* a core Second Amendment right,” but because “[p]ossession of firearms without adequate training and skill does nothing to protect, and much to endanger, the gun owner, his or her family, and the general public.” *Id.*

<sup>328</sup> *Id.* at 62.

<sup>329</sup> *Id.* at 61–62.

situations,’ including driving situations that can lead to road rage, ‘crowd situations, demonstrations, family disputes,’ and other situations ‘where it would be better to not have the presence of a firearm.’”<sup>330</sup>

After the Second Circuit upheld the training restriction, the Supreme Court granted certiorari. But then, to avoid the Court’s review by mootng the case, the City amended its licensing law to allow the taking of firearms to shooting ranges outside the city.<sup>331</sup>

The City’s scheme worked; a majority of the Court ruled the case moot due to the change in the law. Justices Alito, Thomas, and Gorsuch dissented. After disputing the majority’s mootness ruling, the dissent addressed the constitutionality of the pre-amendment training restriction. Because “tak[ing] a gun to a range in order to gain and maintain the skill necessary to use it responsibly” is “a necessary concomitant” of self-defense, the dissent explained, “a reasonable opportunity to practice is part of the very right recognized in *Heller*.”<sup>332</sup> The fact that the plaintiffs could have trained at out-of-city ranges with someone else’s gun was not enough to satisfy that right:

It is true that a lawful gun owner can sometimes practice at a range using a gun that is owned by and rented at the range. But the same model gun that the person owns may not be available at a range, and in any event each individual gun may have its own characteristics. Once it is recognized that the right at issue is a concomitant of the same right recognized in *Heller*, it became incumbent on the City to justify the restrictions its rule imposes, but the City has not done so. It points to no evidence of laws in force around the time of the adoption of the Second Amendment that prevented gun owners from practicing outside city limits. The City argues that municipalities restricted the places within their jurisdiction where a gun could be fired, and it observes that the Second Amendment surely does not mean that a New York City resident with a premises license can practice in Central Park or Times Square. That is certainly true, but that is not the question. Petitioners do not claim the right to fire weapons in public places *within the City*. Instead, they claim they have a right to practice at ranges and competitions *outside*

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<sup>330</sup> *Id.* at 63.

<sup>331</sup> *N.Y. State Rifle & Pistol Ass’n v. City of New York*, 140 S. Ct. 1525, 1527–28 (2020) (Alito, J., dissenting) (“[O]nce we granted certiorari, both the City and the State of New York sprang into action to prevent us from deciding this case. . . . the City quickly changed its ordinance. And for good measure the State enacted a law making the old New York City ordinance illegal.”). The law was also amended to allow licensees to transport firearms to second homes outside of the city. *Id.* at 1526.

<sup>332</sup> *Id.* at 1541–42.



*the City*, and neither the City, the courts below, nor any of the many *amici* supporting the City have shown that municipalities during the founding era prevented gun owners from taking their guns outside city limits for practice.<sup>333</sup>

Because “[h]istory provides no support for a restriction of this type,” the dissenting Justices would have held the law violative of the Second Amendment.<sup>334</sup>

### *B. Federal Circuit Courts*

#### *1. Ezell v. City of Chicago (Ezell I)*

*Ezell v. City of Chicago (Ezell I)* was a challenge to a Chicago ordinance that both required an hour of range training to own a firearm and prohibited any firing ranges within the city.<sup>335</sup>

The Seventh Circuit applied the same two-part test applied by the Second Circuit in *New York State Rifle & Pistol Association*.<sup>336</sup> First, the Seventh Circuit determined that range training is a protected activity because “[t]he right to possess firearms for protection implies a corresponding right to acquire and maintain proficiency in their use.”<sup>337</sup> Indeed, “the core right [of self-defense] wouldn’t mean much without the training and practice that make it effective.”<sup>338</sup> In step two, the Court determined that “not quite ‘strict scrutiny’” was the appropriate standard because the ordinance was “a serious encroachment on the right to maintain proficiency in firearm use, an important corollary to the meaningful exercise of the core right to possess firearms for self-defense.”<sup>339</sup>

Chicago did “not come close to satisfying this standard,”<sup>340</sup> because it relied entirely on “speculation” and failed to present any data or expert opinion.<sup>341</sup> Even if it had, the ordinance would have failed because the risk posed by shooting ranges “can be addressed through sensible zoning and other appropriately tailored regulations” that are substantially less burdensome than a complete prohibition.<sup>342</sup> For example, “straightforward range-design measures that can effectively guard against

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<sup>333</sup> *Id.* at 1541.

<sup>334</sup> *Id.* at 1544.

<sup>335</sup> 651 F.3d 684, 689–90 (7th Cir. 2011). The ordinance banned “[s]hooting galleries, firearm ranges, or any other place where firearms are discharged.” *Id.* at 691 (quoting CHI. MUN. CODE § 8-20-280).

<sup>336</sup> 883 F.3d 45, 45 (2d Cir. 2018).

<sup>337</sup> *Ezell I*, 651 F.3d at 704.

<sup>338</sup> *Id.*

<sup>339</sup> *Id.* at 708.

<sup>340</sup> *Id.* at 709.

<sup>341</sup> *Id.* at 690, 709.

<sup>342</sup> *Id.* at 709.

accidental injury,” designated “locations for the loading and unloading of firearms,” as well as “limiting the concentration of people and firearms in a range’s facilities, the times when firearms can be loaded, and the types of ammunition allowed.”<sup>343</sup> And, of course, the irony was not lost on the Court that Chicago considered range training so critical that the city made it a prerequisite to firearm ownership, yet at the same time argued that it had no place within city limits.<sup>344</sup>

## 2. *Ezell v. City of Chicago (Ezell II)*

In response to *Ezell I*, Chicago enacted a new ordinance, which was challenged in *Ezell II*. Specifically, the plaintiffs challenged three provisions:

(1) a zoning restriction allowing gun ranges only as special uses in manufacturing districts; (2) a zoning restriction prohibiting gun ranges within 100 feet of another range or within 500 feet of a residential district, school, place of worship, and multiple other uses; and (3) a provision barring anyone under age 18 from entering a shooting range.<sup>345</sup>

Under the first two provisions, only 2.2% of the city’s acreage was even available for locating a shooting range.

Applying the same test it applied in *Ezell I*, the Court reiterated its findings from *Ezell I*:

[W]e rejected the City’s argument that range training is categorically unprotected by the Second Amendment. We held that the core individual right of armed defense—as recognized in *Heller* and incorporated against the states in *McDonald*—includes a corresponding right to acquire and maintain proficiency in firearm use through target practice at a range. We explained that the core right to possess firearms for protection “wouldn’t mean much without the training and practice that make it effective.” We noted that *Heller* itself supports this understanding. Finally, we held that the City had failed to establish that target practice is wholly unprotected as a matter of history and legal tradition in the founding era or when the Fourteenth Amendment was ratified.<sup>346</sup>

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<sup>343</sup> *Id.*

<sup>344</sup> *Id.* at 704–05.

<sup>345</sup> *Ezell II*, 846 F.3d 888, 890 (7th Cir. 2017).

<sup>346</sup> *Id.* at 892.

The Court reemphasized that “[r]ange training. . . . lies close to the core of the individual right of armed defense,”<sup>347</sup> and proceeded to apply heightened scrutiny. The range restriction failed scrutiny because the government again failed to provide meaningful evidence and instead relied on speculation.<sup>348</sup>

Regarding the training ban on persons under eighteen, Chicago argued that such persons have no training rights.<sup>349</sup> The Seventh Circuit found otherwise: “There’s zero historical evidence that firearm training for this age group is categorically unprotected. At least the City hasn’t identified any, and we’ve found none ourselves.”<sup>350</sup> Additionally, the Court found nothing from *Heller* that would justify the ban: “To the contrary, *Heller* itself points in precisely the opposite direction.”<sup>351</sup>

Since minors had a right to train at shooting ranges, the Seventh Circuit applied heightened scrutiny to the law prohibiting them from doing so.<sup>352</sup> But the government was “left to rely on generalized assertions about the developmental immaturity of children, the risk of lead poisoning by inhalation or ingestion, and a handful of tort cases involving the negligent supervision of children who were left to their own devices with loaded firearms.”<sup>353</sup> Because the government failed to address these concerns with “a more closely tailored age restriction—one that does not completely extinguish the right of older adolescents and teens in Chicago to learn how to shoot in an appropriately supervised setting at a firing range,” the law violated the Second Amendment.<sup>354</sup>

### 3. *Drummond v. Robinson Township*

Drummond brought suit after Robinson Township forbade center-fire rifle practice at sportsman’s clubs and forbade for-profit entities from operating ranges.<sup>355</sup> Drummond “did not assert that the rim-fire and non-profit rules injure him in his capacity as the operator of a gun range. Instead, he claimed that the rules restrict his

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<sup>347</sup> *Id.* at 893.

<sup>348</sup> *Id.* at 896.

<sup>349</sup> *Id.*

<sup>350</sup> *Id.*

<sup>351</sup> *Id.* (citing 554 U.S. at 617–18, 128 S. Ct. 2783 (“[T]o bear arms implies something more than the mere keeping; it implies the learning to handle and use them . . . ; it implies the right to meet for voluntary discipline in arms, observing in doing so the laws of public order.” (quoting THOMAS MCINTYRE COOLEY, A TREATISE ON THE CONSTITUTIONAL LIMITATIONS 271 (1868))); see also *id.* at 619, 128 S. Ct. 2783 (“No doubt, a citizen who keeps a gun or pistol under judicious precautions, practices in safe places the use of it, and in due time teaches his sons to do the same, exercises his individual right.” (quoting BENJAMIN VAUGHAN ABBOTT, JUDGE AND JURY: A POPULAR EXPLANATION OF THE LEADING TOPICS IN THE LAW OF THE LAND 333 (1880))).

<sup>352</sup> *Ezell II*, 846 F.3d at 897.

<sup>353</sup> *Id.* at 898.

<sup>354</sup> *Id.*

<sup>355</sup> *Drummond v. Robinson Twp.*, 9 F.4th 217, 224 (3d Cir. 2021).

customers’ efforts to acquire firearms and maintain proficiency in their use,” and thus violate their Second Amendment rights.<sup>356</sup>

The Third Circuit applied the familiar two-part test, first asking whether the burdened activity is protected by the Second Amendment and, if so, then applying heightened scrutiny.

At the first step, the Court phrased the questions as follows:

For the rim-fire rifle rule, the question is if the Second and Fourteenth Amendments’ ratifiers approved regulations barring training with common weapons in areas where firearms practice was otherwise permitted. For the non-profit ownership rule, similarly, the question is if our ancestors accepted prohibitions on the commercial operation of gun ranges in areas where they were otherwise allowed.<sup>357</sup>

The Court’s review found that “neither type of regulation rests on deep historical foundations.”<sup>358</sup>

Start with the rim-fire rifle rule. In exploring the history of what weapons citizens may carry for self-defense, *Heller* excluded “dangerous and unusual weapons” from the Second Amendment’s scope but included “arms in common use” within its protection. This “implies a corresponding right to acquire and maintain proficiency” with common weapons. A right to bear those weapons, after all, “wouldn’t mean much without the training and practice that make [them] effective.”<sup>359</sup>

Finding a lack of historical precedent for Robinson Township’s rules, the Court proceeded to apply heightened scrutiny. There, it explained that “[m]ost purchase and practice restrictions merit intermediate rather than strict scrutiny,” with the exception being when “limits on buying and training with weapons in public pose a ‘functional[] bar’ to defense in private.”<sup>360</sup> For example, “[i]f a zoning ordinance has the effect of depriving would-be gun owners of the guns and skills commonly used for lawful purposes like self-defense in their homes, strict scrutiny may be warranted.”<sup>361</sup> But here, by contrast, “the Township’s ordinance preserves avenues for citizens to acquire weapons and maintain proficiency in their use.”<sup>362</sup> For

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<sup>356</sup> *Id.*

<sup>357</sup> *Id.* at 227.

<sup>358</sup> *Id.*

<sup>359</sup> *Id.*

<sup>360</sup> *Id.* at 229.

<sup>361</sup> *Id.* at 229–30.

<sup>362</sup> *Id.* at 230.

instance, it permits non-profit shooting ranges, allows “citizens to train with other forms of ammunition,” and allows commercial ranges and center-fire rifle training in two other districts of the township.<sup>363</sup> So intermediate scrutiny was applied.

The government claimed that its center-fire rifle ban advances “public health, safety, and welfare,”<sup>364</sup> but failed to present anything more than a theory to support its claim. Moreover, the government failed to show that “it ‘seriously considered’ more targeted tools for achieving its ends.”<sup>365</sup> “To take two obvious examples, the Township already instructs Sportsman’s Clubs to implement noise-reduction techniques and range-safety best practices,” and “it cannot forego an entire ‘range of alternatives’ without developing ‘a meaningful record . . . that those options would fail to alleviate the problems meant to be addressed.’”<sup>366</sup> Therefore, the ban failed intermediate scrutiny.

The non-profit rule also failed intermediate scrutiny. The government again failed to present evidence tying the law to its stated interest: “moderat[ing] the intensity of use at Sportsman’s Clubs.”<sup>367</sup> And the government again failed to consider less burdensome alternatives to the law: “It is not apparent, for instance, why the Township could not achieve its goals by implementing occupancy limits or hours-of-operation restrictions, for nowhere has it demonstrated . . . that it ‘reasonably rejected’ common regulatory tools in favor of the unusual prohibition on for-profit firing ranges.”<sup>368</sup>

## CONCLUSION

When America’s Founders created the American government, they drew on the lessons and experiences of their English ancestors, the American colonists, and the Revolutionary War. English history taught them that an armed and trained populace was an effective way to maintain domestic order and prevent foreign invasions. The colonial experience taught them the importance of marksmanship for food and survival, including self-defense and community defense. And the Revolutionary War confirmed that an armed and trained populace was the best defense against a tyrannical government. The Founders’ statements throughout the ratification of the Constitution and Bill of Rights show that they considered a trained populace indispensable to the free government they were establishing. The Second Amendment states it explicitly: “A well regulated Militia,” that is, the body of the people armed and trained, is “necessary to the security of a free State,” so “the right of the people

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<sup>363</sup> *Id.*

<sup>364</sup> *Id.* at 233.

<sup>365</sup> *Id.* at 232 (quoting *Bruni v. City of Pittsburgh*, 824 F.3d 353, 371 (3d Cir. 2016)).

<sup>366</sup> *Drummond*, 9 F.4th at 232 (quoting *Bruni*, 824 F.3d at 370–71).

<sup>367</sup> *Id.*

<sup>368</sup> *Id.* at 233 (quoting *Bruni*, 824 F.3d at 371).

to keep and bear Arms, shall not be infringed.”<sup>369</sup> An express purpose of the Amendment was to safeguard the relationship between a trained society and a free state.

Training was a favorite activity of the Founding generation because it was the best way to improve as marksmen, which is central to every aspect of the right to keep and bear arms. Training develops the skills necessary for effective self-defense and community defense, improves the militia, and deters tyranny. It is thus a pillar of the right, and future courts should treat it as such.

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<sup>369</sup> U.S. CONST. amend. II.

# EXHIBIT 104



## Mass Shootings in the United States

[rand.org/research/gun-policy/analysis/essays/mass-shootings.html](https://www.rand.org/research/gun-policy/analysis/essays/mass-shootings.html)



By [Rosanna Smart](#), [Terry L. Schell](#)

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Summary: There is no standard definition of what constitutes a mass shooting, and different data sources—such as media outlets, academic researchers, and law enforcement agencies—frequently use different definitions when discussing and analyzing mass shootings. For instance, when various organizations measure and report on mass shootings, the criteria they use in counting such events might differ by the minimum threshold for the number of victims, whether the victim count includes those who were not fatally injured, where the shooting occurred, whether the shooting occurred in connection to another crime, and the relationship between the shooter and the victims. These inconsistencies lead to different assessments of how frequently mass shootings occur and whether they are more common now than they were a decade or two ago.

Data show that, regardless of how one defines mass shootings, perpetrators are likely to be men. But several other characteristics that are statistically predictive of perpetration are still uncommon among offenders on an absolute level. The rare nature of mass shootings creates challenges for accurately identifying salient predictors of risk and limits statistical power for detecting which policies may be effective in reducing mass shooting incidence or lethality. Implementing broader violence prevention strategies rather than focusing specifically on the most-extreme forms of such violence may be effective at reducing the occurrence and lethality of mass shootings.



Incidents of mass firearm violence galvanize public attention. There has been extensive media coverage of many incidents in the United States in which individuals have used firearms to kill large numbers of people. These mass public shootings are rare events—they constitute less than 15 percent of all mass killings in the United States and are responsible for less than 0.5 percent of all homicides (Duwe, 2020)—but they have far-reaching impacts on citizens' mental health, anxiety, and perceptions of safety (Lowe and Galea, 2017).<sup>[1]</sup> Mass shootings also frequently generate extensive media coverage related to guns, prompt political discussions about legislative initiatives for how better to prevent gun violence, and may lead to substantial state gun policy changes (Schildkraut, Elsass, and Meredith, 2018; Newman and Hartman, 2019; Luca, Malhotra, and Poliquin, 2020).

In this essay, we first describe different approaches for defining a mass shooting and discuss how using different definitions can influence estimates of mass shooting levels and trends. We then summarize findings from the literature regarding the characteristics of mass shootings, including offender characteristics, types of firearm(s) used, and community-level correlates. We conclude with a brief discussion of the substantial methodological challenges for evaluating how gun policies affect mass shootings. Our discussion here is focused on mass shootings in the U.S. context.

## What Is a Mass Shooting?

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The U.S. government has never defined mass shooting as a separate category of crime, and there is not yet a broadly accepted definition of the term. In the 1980s, the Federal Bureau of Investigation (FBI) defined *mass murderer* as someone who “kills four or more people in a single incident (not including himself), typically in a single location” (Krouse and Richardson, 2015). In 2013, Congress defined *mass killing* as a single incident that leaves three or more people dead (Pub. L. 112-265, 2013). However, both definitions include many incidents that would not be considered mass shootings. Furthermore, neither definition was established for the purpose of data collection or statistical analyses. The FBI classification of mass murderer was established primarily with the aim of clarifying criminal profiling procedures (Ressler, Burgess, and Douglas, 1988), and the congressional definition was intended to clarify statutory authority for the provision of U.S. Department of Justice investigatory assistance requested by state and local agencies (Pub. L. 112-265, 2013). Thus, various news outlets, researchers, and law enforcement agencies often use different definitions when reporting on mass shootings, which can complicate our understanding of mass shooting trends and their relationship to gun policy.<sup>[2]</sup> Table 1 provides examples of the variation in the criteria set by some of the existing data sources on mass shootings in the United States. Depending on which data source is referenced, there were somewhere between six and 503 mass shootings and between 60 and 628 mass shooting fatalities in 2019.

**Table 1. Variation in How Mass Shootings Are Defined and Counted**

<b>Data Source</b>	<b>Casualty Threshold (for injuries or deaths by firearm)</b>	<b>Location of Incident</b>	<b>Motivation of Shooter</b>	<b>Number of U.S. Mass Shootings in 2019</b>	<b>Number of Mass Shooting Fatalities in 2019</b>
<b><i>Mother Jones</i> (see Follman, Aronsen, and Pan, 2020)</b>	Three people fatally injured (excluding shooter) <sup>a</sup>	Public	Indiscriminate (excludes crimes of armed robbery, gang violence, or domestic violence)	10	73
<b>Gun Violence Archive (undated-a)</b>	Four people fatally or nonfatally injured (excluding shooter)	Any	Any	418	465
<b>Mass Shooter Database (The Violence Project, undated)</b>	Four people fatally injured (excluding shooter)	Public	Indiscriminate (excludes crimes of armed robbery, gang violence, or domestic violence)	6	60
<b>AP/USA TODAY/Northeastern University Mass Killings database (see Associated Press and <i>USA Today</i>, 2019; Callahan, 2019)</b>	Four people fatally injured (excluding shooter)	Any	Any	33	174
<b>Everytown for Gun Safety Support Fund (2019)</b>	Four people fatally injured (excluding shooter)	Any	Any	19(in 2018) <sup>b</sup>	112(in 2018) <sup>b</sup>
<b>Mass Shooting Tracker (undated)</b>	Four people fatally or nonfatally injured (including shooter)	Any	Any	503	628
<b>Mass Shootings in America database (see Stanford Geospatial Center, undated)</b>	Three people fatally or nonfatally injured (excluding shooter)	Any	Not identifiably related to gangs, drugs, or organized crime	62 (in 2015) <sup>c</sup>	202 (in 2015) <sup>c</sup>

<sup>a</sup> Before January 2013, the casualty threshold for the *Mother Jones* data was four people fatally injured (excluding the shooter).

<sup>b</sup> As of this writing, the Everytown for Gun Safety Support Fund's Mass Shootings in America website with interactive map was up to date as of April 28, 2020. However, the group's downloadable data included incidents through 2018 only.

<sup>c</sup> Stanford's Mass Shootings in America database was permanently suspended in mid-2016. In this table, we provide incident and fatality counts for 2015, the last year of complete data collection. For archived data, see Stanford Geospatial Center, 2018.

Although there is no official standard for the casualty threshold that distinguishes a mass shooting from other violent crimes involving a firearm, a common approach in the literature is to set a casualty threshold of four fatalities by firearm, excluding the offender or offenders (Fox and Levin, 1998; Duwe, Kovandzic, and Moody, 2002; Gius, 2015c; Krouse and Richardson, 2015; Fox and Fridel, 2016). Using this criterion helps reduce measurement error in identifying mass shootings because fatalities are captured in administrative data and are frequently included in media reports (Duwe, 2000). However, this categorization is not without controversy. It does not capture incidents in which fewer than four victims were killed but additional victims were nonfatally injured, and it does not include multiple-victim homicides in which fewer than four fatalities resulted from gunshots but additional fatalities occurred by other means. Thus, many have chosen alternative definitions of casualty thresholds for mass shootings. For instance, Lott and Landes (2000) adopted the definition of two or more injured victims, Kleck (2016) used a six-victim casualty threshold, the Gun Violence Archive (undated-a) defined *mass shooting* as an incident in which four or more victims (excluding the shooter) are injured or killed, and the Mass Shooting Tracker (undated) set a criterion of four or more people injured or killed (including the shooter).



This page is part of RAND's Gun Policy in America initiative, one of the largest studies ever conducted on the subject. »

Another definitional disagreement is whether to include multiple-victim shooting incidents that occur in connection with some other crime or domestic dispute. Because mass shootings that stem from domestic and gang violence are contextually distinct from high-fatality indiscriminate killings in public venues, some analysts have argued that they should be treated separately. In their analyses of “mass public shootings,” Lott and Landes (2000) excluded any felony-related shooting, and Duwe, Kovandzic, and Moody (2002) excluded incidents where “both the victims and offender(s) were involved in unlawful activities, such as organized crime, gang activity, and drug deals” (p. 276). Similarly, other researchers (e.g., Gius, 2015c; Luca, Malhotra, and Poliquin, 2020) have restricted analyses to events that occurred in a relatively public area and in which victims appeared to have been selected randomly. However, others have claimed that this narrow definition ignores a substantial proportion of gun-related violence from family- or felony-related murder (Fox and Levin, 2015). Furthermore, determinants of whether victims were selected indiscriminately or whether the incidents were gang- or crime-related are, to some degree, subjective. Accurate information about the shooter’s motivations or connection to gangs may not have been included in police or news reports of the incidents. In contrast, the Mass Shooting Tracker and the Gun Violence Archive count as mass shootings all incidents that meet their designated casualty threshold, regardless of the circumstances that led to the event or the motivation of the shooter.

These definitions make a substantial difference in which incidents are counted.<sup>[3]</sup> As noted earlier, depending on which data source is used, there were between six and 503 mass shootings in the United States in 2019 (see Table 1); that amounts to a range of incident rates from approximately one incident per 50 million people in the United States to one incident per 1 million people. More-restrictive definitions (e.g., from *Mother Jones*) focus on the prevalence of higher-profile events motivated by mass murder, but they omit more-common incidents occurring in connection with domestic violence or criminal activity, which make up about 80 percent of mass shooting incidents with four or more fatally injured victims (Krouse and Richardson, 2015). Broader definitions (e.g., from the Gun Violence Archive) provide a more comprehensive depiction of the prevalence of gun violence, but they obscure the variety of circumstances in which these incidents take place and their associated policy implications. Furthermore, if the effects of a firearm policy are expected to affect only mass public shooting incidents, then analyses that include domestic violence mass shootings could obscure identification of the expected effects of the policy. Thus, there is value in having multiple measurements of mass shootings—but only if their definitions are clearly and precisely explained and they are used by researchers in a manner appropriate to the analysis.

Although researchers, policymakers, and reporters may rightly make different decisions about the criteria they wish to use to define what counts as a mass shooting, these decisions fundamentally shape the scope of incidents considered, as well as the potential for measurement error in their data. Data sets that use definitions based solely on objective criteria that are widely available across multiple sources (e.g., fatality counts) likely offer greater reliability compared with data sets that rely on objective criteria that may not be consistently reported across multiple sources (e.g., nonfatal shooting injury counts) or that may be difficult to operationalize (e.g., public location).<sup>[4]</sup> Data sets that define mass shootings based on relatively subjective criteria (e.g., whether an incident was related to criminal activity or domestic violence) may be particularly difficult to reconcile because underlying sources may disagree or differently report on these factors. *Mother Jones*, the Mass Shooter Database, and the Mass Shootings in America database are examples of sources that use some subjective criteria. In the absence of a clear conceptual reason for restricting mass shooting incidents of interest based on subjective criteria, evaluations are likely to produce more-reliable and more-replicable results when using data sources that define mass shootings based only on fatality thresholds (see Table 1).



The Mass Attacks Defense Toolkit provides practical strategies and guidance on deterring, mitigating, and responding to mass attacks. »

Another fundamental issue in documenting mass shootings, and in reconciling differences across data sets, is that the methods used to collect information on mass shootings also vary across sources. There is no comprehensive, administrative data source that captures mass shootings; however, data from the FBI's Supplementary Homicide Reports (SHR) database provide information from 1976 onward on most homicides in the United States, typically including information on the weapon types, number of victims, and number of offenders involved, which can be used to identify which incidents meet specific definitional thresholds of fatalities (Puzzanchera, Chamberlin, and Kang, 2018).<sup>[5]</sup> When such details are known, the SHR database also provides information on victim-offender relationships (e.g., husband or wife, stranger, neighbor)<sup>[6]</sup> and incident circumstances (e.g., "gangland killing," "lovers' triangle," "brawl due to influence of alcohol"), which could be used as indicators of familicides and felony-related killings. However, the SHR database relies on voluntary submissions by thousands of separate law enforcement agencies. It does not capture all incidents (about 90 percent completeness), and this missingness is not random. Sometimes, entire states do not submit data for a year or for part of a year, and in most states and years, at least some law enforcement agencies do not submit complete data (Fox, 2004; Fox and Swatt, 2009). In addition to missingness by jurisdiction, there is a high degree of missingness for data elements, particularly in offender characteristics (e.g., the offender may not be known) and incident characteristics (e.g., circumstances or victim-offender relationship).<sup>[7]</sup> Some analyses have also compared SHR variables with data in police incident reports in specific jurisdictions and found evidence of misclassification regarding victim-offender relationship and incident circumstances (Pizarro and Zeoli, 2013). Others have cross-referenced SHR incidents with historical news records and found issues of coding errors in the SHR database that could affect identification of mass shooting incidents (e.g., double counting of victims or incidents, misclassifying a nonfatal injury as a fatal injury) (Duwe, 2000). Although researchers have noted that these recording errors are relatively uncommon in the SHR, the errors are still important considerations for using the SHR to assess mass shootings (Duwe, 2000; Fox, 2006). Finally, the SHR provides relatively limited detail on offender or victim characteristics, firearm types, and incident setting.

Given these limitations, most data sources for mass shootings do not derive solely from the SHR. Some sources (e.g., the AP/USA TODAY/Northeastern University Mass Killings database) combine information from both news reports and the SHR, others (e.g., *Mother Jones*) rely on news reports alone, and some (e.g., the Mass Shooter Database) combine information from law enforcement records, social media, court transcripts, news accounts, and other primary and secondary sources to obtain detailed information on the characteristics of each incident and offender (see Table 2). Differences in data collection strategies, in large part, reflect differences in the mass

shooting definitions employed (e.g., sources that count nonfatal shooting injuries in their criteria must rely on sources other than the SHR, which captures only fatal injuries), as well as differences in the proposed purpose of the database.

**Table 2. Data Collection Methods and Data Elements Captured Across Mass Shooting Data Sources**

<b>Data Source and Year Established</b>	<b>Stated Purpose of the Data Set</b>	<b>Methods for Data Collection</b>	<b>Time Period<sup>a</sup></b>	<b>Data Elements Captured<sup>b</sup></b>
<b>Mother Jones</b> Established 2012	To track the "distinct phenomenon" of indiscriminate shooting rampages in public places resulting in four or more victims killed (later, three or more victims killed)	Media reports	1982–present	City, state, latitude, and longitude; date; number of fatalities; number injured; setting; shooter gender, race, and age; prior signs of mental health problems for shooter; method of gun acquisition; gun type
<b>Gun Violence Archive</b> Established 2013	To provide data about gun violence in near real time	Automated queries and manual research of more than 7,500 sources (e.g., local and state police records, media, government reports, existing data aggregates) Each case involves secondary validation and de-duplication.	2014–present	City, state, latitude, and longitude; date; number of fatalities; number injured; victim name, age, and gender; suspect or offender name, age, and gender; incident resolution; summary of incident; weapons involved (gun type, whether stolen)
<b>Mass Shooter Database</b> Established 2017	To study the life histories of mass shooters who shot and killed four or more people in a public place	Primary sources (e.g., social media, correspondence with perpetrators) and secondary sources (e.g., media, court transcripts, journal articles, autopsy reports, medical, school, and law enforcement records) Each case involves independent validation and de-duplication.	1966–2019	City, state; incident setting; perpetrator age and gender; number killed; 100 life-history variables for offender, including mental health history, trauma, interest in past shootings, and situational triggers
<b>AP/USA TODAY/Northeastern University Mass Killings database</b> Established 2006	To provide a comprehensive repository on every mass murder (four or more people, excluding the killer, killed within a span of 24 hours)	Media reports and the SHR database Further details are not provided. Data are not currently publicly available.	2006–2019	City, state; date; number of victims; method (e.g., shooting); weapon type; incident summary

Data Source and Year Established	Stated Purpose of the Data Set	Methods for Data Collection	Time Period <sup>a</sup>	Data Elements Captured <sup>b</sup>
<b>Everytown for Gun Safety Support Fund mass shootings database<sup>c</sup> Established 2013</b>	To understand mass shootings (four or more killed) and help point lawmakers to strategies to prevent such events	Primarily media reports, supplemented with the SHR database and police and court records	2009–present	City, state; date; number killed (by sex); number injured (by sex); number under age 20 killed; number of law enforcement officer deaths and injuries; setting; gun types; shooter age, sex, prohibited possessor status, outcome; whether shooter displayed dangerous warning signs and had prior history of domestic violence; whether there was high-capacity magazine use; incident summary
<b>Mass Shooting Tracker Established 2013</b>	To track all mass shootings with more than three people shot in a single spree	Crowd-sourced data collection, unknown procedures	2013–present	City, state; number killed; number injured; brief incident name and summary (e.g., offender name, victims)
<b>Mass Shootings in America database Established 2012</b>	To provide a curated set of spatial and temporal data about mass shootings in the United States, taken from online media sources, with the aim of facilitating research on gun violence in the United States	Online media resources In general, a minimum of three corroborating sources are required to add the full record into the data set.	1966–2016	City, state, latitude, and longitude; date, day of week; number of shooters; number of civilian deaths and injuries; number of law enforcement officer deaths and injuries; shooter age, name, sex, and outcome; number (and types) of guns; setting; motive; shooter history of mental illness; shooter military experience; incident summary

<sup>a</sup> In this column, *present* means the beginning of 2021.

<sup>b</sup> This column represents the data elements that the source attempts to capture; in many cases, these fields are missing information.

<sup>c</sup> For this data set and reporting on it, see Everytown for Gun Safety Support Fund, 2019.

However, variation in the sources examined to identify incidents can result in varying degrees of completeness or reliability. Data sets that rely solely on news sources or crowd-sourcing (i.e., *Mother Jones*, the Mass Shooting Tracker, and the Mass Shootings in America database) may systematically miss lower-profile incidents and those involving fewer injuries or fatalities (Duwe, 2000; Schildkraut, Elsass, and Meredith, 2018). Systemic biases in the types of incidents that receive widespread media coverage affect the number of incidents that are counted but might also misrepresent the relative characteristics of offenders, victims, or communities involved (Silva and Capellan, 2019a, 2019b). For example, news reports may be less likely to include the perpetrator's race when he or she is White (Park, Holody, and Zhang, 2012) and may be more likely to include speculation about gang involvement when racial and ethnic minorities are involved (Entman and Gross, 2008). Given media sources' limited capacity to cover all current events, mass shootings that occur during other newsworthy events (e.g., presidential elections) may also be systematically missed, particularly in historical analysis relying on print or television media. Finally, the media landscape has changed dramatically over the past three decades; daily local newspapers have disappeared across much of the United States, and the extent to which news sources are searchable on the internet has also changed (Duwe, 2000).



Thus, any comparison over time in the number or characteristics of mass shootings necessarily involves comparisons across different media sources with different coverage areas, intended audiences, and editorial practices. Data sources that combine information across media reports and law enforcement administrative data—for example, the Gun Violence Archive, the Mass Shooter Database, the Everytown for Gun Safety Support Fund mass shootings database, and the AP/USA TODAY/Northeastern University Mass Killings database—are likely to be more complete, particularly in measuring incidents over a longer historical time frame. However, it is a challenging effort to ensure that different sources of information about the same incident are properly linked (i.e., without a unique incident identifier, researchers must make linkages based on similarities in date, location, and incident information, which may not be identical across different reports of the same incident) so that multiple reports are not counted as separate incidents. Thus, data sets that triangulate across multiple underlying sources (e.g., the Mass Shooter Database and the Gun Violence Archive) require additional effort toward de-duplication and validation.

And even when data sources use the same definition of what constitutes a mass shooting, variation in data collection methods can result in different estimates of mass shooting prevalence. As an example of this issue, Duwe (2020) triangulated information from the SHR, online newspaper databases, and unpublished mass shooting data sets and found that the *Mother Jones* database missed more than 40 percent of mass shootings that met the source's own criteria between 1982 and 2013. Greater missingness occurred for incidents further back in time, likely because of greater challenges with accessing comprehensive news accounts prior to widespread use of digital media for news reporting. Comparing four data sources for mass shootings (the Everytown for Gun Safety Support Fund's mass shootings database, the Gun Violence Archive, the *Mother Jones* database, and the FBI's SHR database), and applying the same definition of mass shooting to each (four or more fatalities, excluding the shooter), Booty et al. (2019) found that estimates of the number of mass shootings in 2017 ranged from five (*Mother Jones*) to 24 (Gun Violence Archive). When triangulating across data sets, the researchers identified 32 unique mass shooting incidents, but only two incidents (6.3 percent) were common to all four data sources. For further discussion, see Booty et al. (2019), Duwe (2000, 2020), and Huff-Corzine and Corzine (2020), which contain a more comprehensive discussion of data collection efforts and their limitations.

## Are Mass Shootings on the Rise?

In 2014, the FBI released a study showing that “active shooting incidents” had increased at an average annual rate of 16 percent between 2000 and 2013 (Blair and Schweit, 2014).<sup>[8]</sup> In contrast to the varied definitions for mass shootings, there is an agreed-upon definition among government agencies for *active shooter*: “an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearm(s) and there is no pattern or method to their selection of victims” (U.S. Department of Homeland Security, 2008, p. 2). Using a modified version of this definition to include incidents that had multiple offenders or occurred in confined spaces, Blair and Schweit (2014) found that active shootings had increased from only one incident in 2000 to 17 in 2013. The FBI active shooting reports, which are now produced annually, identified 20 active shooter incidents in 2016, 30 incidents in 2017, 27 incidents in 2018, and 28 incidents in 2019 (FBI, 2018g, 2019g, 2020).

Although Blair and Schweit (2014) explicitly stated that their original FBI active shooter study was “not a study of mass killings or mass shootings” (p. 5), extensive media coverage cited the study as evidence of a sharp rise in mass shootings and mass shooting fatalities (Lott, 2015). However, Blair and Schweit (2014)'s definition of an active shooter incident includes some incidents that would be excluded under any of the commonly used criteria for mass public shootings (see Table 1) because it does not set any casualty threshold. For example, Blair and Schweit's definition includes some incidents in which no people were injured or in which one person was killed and no others were wounded. Setting a threshold of zero victims increases the potential for measurement error, because shooting incidents with no casualties are more difficult to identify from police records and are less likely to receive media coverage (Duwe, Kovandzic, and Moody, 2002). Additionally, because it should be relatively easier to identify more-recent shootings with few fatalities, a low casualty threshold will tend to systematically bias



estimates of the number of shootings upward over time.<sup>[9]</sup> Even when using a higher-fatality threshold, mass shooting data sources that rely solely on news reports to identify cases also appear to systematically undercount incidents from earlier periods (see previous section and Duwe, 2020).

Even when a more restrictive casualty threshold of four or more fatally injured victims (excluding the shooter) is imposed, empirical evidence on trends in these incidents varies depending on whether the motivation of the shooter is included as a criterion for considering an event a mass shooting. In their analysis of mass shooting trends from 1999 to 2013, Krouse and Richardson (2015) distinguished among mass shootings occurring in public locations that are indiscriminate in nature (“mass public shootings”), mass shootings in which the majority of victims are members of the offender’s family and that are not attributable to other criminal activity (“familicide mass shootings”), and mass shootings that occur in connection to some other criminal activity (“other felony mass shootings”). Duwe (2020) adopted similar distinctions in his analysis of mass shootings over the longer time frame of 1976 to 2018.

Figures 1 and 2 show trends in mass shooting incidents and mass shooting fatalities, using the data provided by Duwe (2020), who created his own data set aggregating across several of the sources described in this essay. Using Krouse and Richardson (2015)’s definition of “mass public shootings,” Duwe (2020) found that such events constituted about 19 percent of all mass shooting incidents and 27 percent of all mass shooting fatalities from 1976 to 2018. The data from multiple studies suggest a slight increase in the incidence rate of mass public shootings over the past four decades (Cohen, Azrael, and Miller, 2014; Krouse and Richardson, 2015; Duwe, 2020). From 2016 to 2018, the annual rate of mass public shooting incidents was about one incident per 50 million people in the United States (Duwe, 2020). Considering the number of fatalities in these shootings, this corresponds to approximately 0.4 percent of all homicides, or approximately 0.2 percent of all firearm deaths, over that period. However, using an expanded definition of mass shootings that includes domestic- or felony-related killings, there is little evidence to suggest that mass shooting incidents or fatalities have increased (Cohen, Azrael, and Miller, 2014; Krouse and Richardson, 2015; Fox and Fridel, 2016). Adjusted for changes in the size of the U.S. population, the incidence of all mass shootings (four or more fatally injured victims, excluding the offender, regardless of shooter motivation or circumstances) was highest in the late 1980s and early 1990s, averaging one incident per 10 million people from 1989 to 1993 (Duwe, 2020). More recently, between 2016 and 2018, the annual rate of all mass shooting incidents was about one incident per 14 million people (Duwe, 2020). Considering the number of fatalities in these mass shootings, this corresponds to approximately 0.8 percent of all homicides, or approximately 0.4 percent of all firearm deaths, over that period. Thus, different choices about how to define a mass shooting result in different findings for both the prevalence of these events at a given time and whether their frequency has changed over time.

**Figure 1. Trends in Mass Shooting Incidents, 1976–2018**



SOURCE: Author analysis of data from Duwe, 2020.

**Figure 2. Trends in Mass Shooting Fatalities, 1976–2018**



SOURCE: Author analysis of data from Duwe, 2020.

Even if we set aside the facts that reliance on different data sources over time complicates measurement and that findings can depend on how mass shootings are defined, the relative rarity of mass shooting events makes analysis of trends particularly difficult. Chance variability in the annual number of mass shooting incidents makes it hard to discern a clear trend in the risk of such incidents, and trend estimates are sensitive to outliers and to the time frame chosen for analysis (Fox and DeLateur, 2014). For example, although Krouse and Richardson (2015) found evidence of an upward trend in mass public shootings from 1999 to 2013, they noted that the increase was driven largely by events in 2012, in which there was an unusually high number of mass public shooting incidents. Additionally, Lott (2015) suggested that the FBI study's estimate of a dramatic increase in active shooter incidents was largely driven by the choice of 2000 as the starting date, because that year had an unusually low number of shooting incidents. Conducting his own analysis to cover 1977 through 2014, and adjusting the data to exclude

events with fewer than two fatalities, Lott (2015) found a much smaller and statistically insignificant increase (less than 1 percent annually) in mass shooting fatalities over time. However, when other researchers extended the time frame to cover more-recent years and used a four-fatality threshold for mass public shootings, their findings suggested a significant increase in the incidence and lethality of these events over time (Sanders and Lei, 2018; Duwe, 2020; Lankford and Silver, 2020).

The leverage of extreme incidents is even clearer when examining trends in the number of casualties from mass public shootings over time (Figure 3). The data on deaths and injuries from 2017 mass public shootings are particularly striking: Just one of the seven incidents that occurred (the Las Vegas shooting in October 2017) accounted for more than half of all mass public shooting fatalities and nonfatal injuries in that year.<sup>[19]</sup> However, even when we exclude the Las Vegas incident, 2008 through 2018 saw the highest average rate of casualties from mass public shootings since the 1970s. In 2018, mass public shootings were responsible for approximately one death per 4 million people in the United States (Duwe, 2020), representing fewer than one of every 200 homicides in that year.

Although different choices about how to define a mass shooting and the period over which to calculate mass shooting trends have resulted in disagreement about whether the frequency of mass shootings has risen, there is clear evidence that the media's use of the term *mass shooting* has increased significantly in recent decades (Roeder, 2016). Unfortunately, the trends one finds in measuring mass shootings over time depend heavily on how the term is defined and the precise period over which the trend is observed, and these trends are likely to be biased by changes in the completeness of the underlying data sources over time. This ambiguity makes it difficult to draw firm conclusions about how these incidents have changed over time or how that information should be used as we try to understand the determinants, costs, and policy implications of mass shootings.

**Figure 3. Trends in Mass Public Shooting Casualties, 1976–2018**



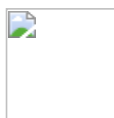
SOURCE: Author analysis of data from Duwe, 2020.

### **Characteristics of Mass Public Shootings**

Several studies, largely focused on mass public shootings, have sought to describe the characteristics of individuals who perpetrate mass shootings, evaluate characteristics of each mass shooting incident, and identify the behaviors and motivations that preceded each incident. Most of these studies are purely descriptive, not comparative, and thus should not be interpreted as providing evidence of whether specific individual-level or community-level characteristics are predictive of someone perpetrating a mass shooting.

According to this literature (see, for example, Capellan et al., 2019; Duwe, 2020), the perpetrators of mass public shootings in the United States have been overwhelmingly male (98 percent) and are most commonly non-Hispanic White (61 percent). In addition, they are most commonly younger than age 45 (82 percent); more specifically, 26 percent of mass public shooters from 1976 to 2018 were younger than age 25, 27 percent were aged 25 to 34, and 29 percent were aged 35 to 44. Relative to the overall U.S. population, mass public shooting offenders are much more likely to be male and are somewhat younger; relative to other homicide offenders, males and non-Hispanic Whites are overrepresented among mass public shooters, and mass public shooters are older. For comparison, of the overall U.S. population in 2019, approximately 49 percent was male, 60 percent was younger than age 45, and 60 percent was non-Hispanic White (U.S. Census Bureau, 2020). Of murderers in 2018 with known offender characteristics, 88 percent were men, 84 percent were younger than age 45 (38 percent younger than 25, 31 percent aged 25 to 34, and 16 percent aged 35 to 44), and 42 percent were White (Hispanic ethnicity information was not provided) (FBI, 2019f).

Media coverage often links mass public shootings with serious mental illness (McGinty et al., 2014, 2016), but estimates of the prevalence of mental illness among mass public shooting offenders vary widely depending on the types of incidents considered and the methods used to define and identify mental illness. Rates of formal diagnoses of psychotic disorders (including diagnoses made post-incident, which may be affected by the incident itself) among mass public shooters are estimated to be about 15 to 17 percent (Stone, 2015; Fox and Fridel, 2016).<sup>[11]</sup> Studies that use a broader definition of mental illness and consider informal evidence indicative of mental health problems (e.g., statements by law enforcement or family before or after the incident) have found prevalence rates ranging from 30 to 60 percent (Taylor, 2018; Capellan et al., 2019; Duwe, 2020). This informal evidence, which is often obtained subsequent to the incident, is invariably affected by the act of mass violence itself (Skeem and Mulvey, 2020). It does not suggest that mental illness is useful for predicting a subsequent mass shooting. Of note, a study of 106 perpetrators of mass public shootings in the United States between 1990 and 2014 found that less than 5 percent of offenders ( $n = 5$ ) had a history of involuntary commitment or adjudication of dangerousness that would have prohibited them from purchasing a firearm following the federal mental health background check (Silver, Fisher, and Horgan, 2018). Although most research supports that, overall, people with serious mental illness are overrepresented among mass public shooters (Duwe, 2020; Skeem and Mulvey, 2020), this does not imply that serious mental illness *causes* mass shootings, just as we cannot conclude that being a young man causes mass shootings.



## **The Experts Weigh In**

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[Compare expert opinions on how gun policies may affect mass shootings in your state and the U.S. as a whole. »](#)

Other researchers and analysts have noted that many mass shooters have a history of domestic violence. Using three mass shooting databases (whose underlying data sources include media reports, court records, and police records) and their own search of criminal records, Zeoli and Paruk (2020) analyzed 89 individuals who perpetrated a mass shooting (involving four or more fatalities, excluding the offender) between 2014 and 2017. Of the 89 individuals, 28 (31 percent) had a history of suspected domestic violence. The authors identified that, of those 28, 17 (61 percent) had prior interaction with the criminal justice system related to domestic violence, and six individuals had a felony or misdemeanor conviction for domestic violence. Using a different definition of mass shooting (involving four or more casualties, including the perpetrator, and excluding felony-related mass shootings), Gu (2020) found that 36 percent of mass shooting incidents from 2014 to 2019 involved an offender with a history of domestic violence or violence against women. Of note, both of these studies included mass shooting familicides, which represent the modal type of mass shooting. Given that intimate partner homicides are commonly preceded by prior incidents of nonfatal domestic violence (Campbell et al., 2007), it may be expected that perpetrators of mass shooting familicides commonly have prior histories of domestic violence. In a study of mass murders from

2006 to 2016 (74 percent of which were shootings), Fridel (2017) found that 30 percent of familicides, 7 percent of mass public killings, and 3 percent of felony-related killings involved an offender with a known history of domestic violence.<sup>[12]</sup> But because we do not know the rate of domestic violence in the general population based on comparable definitions and data sources, it is not clear the precise extent to which prior domestic violence represents a risk factor for perpetrating a mass shooting.

It is challenging to make broad generalizations about the individual-level motivations of mass shootings. When mass shootings are broadly defined to include familicides, felony-related killings, and mass public shootings, the events include heterogeneous incident types that vary in terms of victim, offender, and incident characteristics (Fridel, 2017; Taylor, 2018). Felony-related killings exhibit particular differences from familicides and mass public shootings. They are, by definition, criminally motivated (in contrast to familicides and mass public shootings, which are more commonly motivated by relationship problems, group grievances, or ideological extremist beliefs); result in significantly fewer deaths; and are significantly less likely to conclude with the death of the perpetrator (Fridel, 2017; Capellan et al., 2019).<sup>[13]</sup> The etiology of felony-related mass shootings thus, unsurprisingly, bears a stronger resemblance to firearm homicides more broadly. In contrast, familicides and mass public shootings show stronger similarities in terms of offender characteristics and motivations (Fridel, 2017).

Even the subset of mass public shootings seems to encompass a variety of offender types, and some researchers have suggested that the relative prevalence of these offender typologies has changed over time (Capellan et al., 2019).<sup>[14]</sup> When Capellan and colleagues considered incidents in which an offender used a firearm to kill or “attempt to kill” four or more victims in a public setting, they found that school shootings constituted the majority of mass public shooting incidents in the 1960s and 1970s, and workplace shootings became increasingly prevalent in the 1980s to 2000s (Capellan and Gomez, 2018; Capellan et al., 2019).<sup>[15]</sup> The past decade has seen an increase in the percentage of mass public shootings that are posited to relate to fame-seeking on behalf of the individual or on behalf of a broader ideology (Capellan et al., 2019; Lankford and Silver, 2020). Some researchers have suggested that this rise in fame- and attention-seeking motivations among mass public shooters has contributed to an escalation in the lethality of these incidents (Langman, 2018; Lankford and Silver, 2020).

Although there are some noted differences across different types of mass public shootings (Capellan and Anisin, 2018; Capellan et al., 2019), an overarching commonality is that most incidents are preceded by some level of planning by the shooter. Among active shooting cases from 2000 to 2013 for which sufficient information was available, 62 percent of offenders planned the attack for more than one month, and 9 percent planned for more than one year (Silver, Simons, and Craun, 2018). Focusing on incidents involving eight or more fatally injured victims, Lankford and Silver (2020) found that at least half of the 18 high-fatality mass public shootings between 2010 and 2019 involved a planning period of one year or longer. About 40 percent of mass public shooters make some form of verbal or written threat (e.g., threats made in front of family or friends or posted to social media) prior to the incident (Duwe, 2020).

Another strand of research has described the types of firearms used in mass shooting incidents and the extent to which variation in weapon choice relates to the lethality of the incident. There are noted challenges to conducting such analyses, partly because of the absence of any official data source that provides complete information on the types of firearms or associated equipment (e.g., ammunition, magazines, scopes) used in shootings (for further discussion, see Koper, 2020). It is common for multiple firearms to be involved in public shootings: Various studies have indicated that multiple firearms were involved in an estimated 34 percent of active shooting incidents across 2000–2017 (de Jager et al., 2018), 42 percent of mass public shooting incidents across 1999–2013 (Krouse and Richardson, 2015), and 79 percent of mass public shooting incidents that resulted in eight or more fatalities across 1966–2019 (Lankford and Silver, 2020). In an analysis of mass public shootings in which shooters *attempted* to kill at least four individuals, Capellan and Jiao (2019) found that 80 percent of offenders had prior access to a firearm, although 41 percent of those individuals obtained additional firearms for the incident.

As shown in Table 3, handguns are the firearm most commonly involved in active shootings and mass shootings; semiautomatic rifles or “assault-style” weapons are used in an estimated 10 to 36 percent of active shootings and mass shootings.<sup>[16]</sup> The use of large-capacity magazines (LCMs) is more common in mass public shootings and

high-fatality mass shooting incidents than it is in firearm crimes overall. The estimated prevalence of LCM involvement in mass shootings ranges from 20 to 60 percent, or from 45 to 60 percent when restricting the denominator to mass public shootings or high-fatality mass shootings (Table 3). For comparison, LCM-equipped firearms are estimated to constitute 22 to 36 percent of crime guns recovered by police in most urban jurisdictions (Koper et al., 2018). The estimated prevalence of LCM-equipped firearms in the overall stock of civilian-owned firearms is about 15 to 20 percent, although these estimates come from survey data from 1994, and the prevalence has likely increased since then (Cook and Ludwig, 1996; Kleck, 2020).



**Table 3. Percentage of Mass Shooting Incidents Involving the Use of a Firearm with a Large-Capacity Magazine or the Use of a Semiautomatic Rifle or Assault Weapon**

<b>Data Source</b>	<b>Mass Shooting Definition</b>	<b>Period of Study and Number of incidents</b>	<b>Firearm with an LCM<sup>a</sup>(%)</b>	<b>Semiautomatic Rifle or Assault Weapon<sup>b</sup>(%)</b>
<b>Everytown for Gun Safety Support Fund (2018)</b>	Four or more people fatally injured	2009–2017, <i>n</i> = 173	20–58	NR
<b>Koper et al. (2018)</b>	Four or more people fatally injured	2009–2015, <i>n</i> = 145	19–57	10–36
<b>Krouse and Richardson (2015)</b>	Four or more people fatally injured	1999–2013, <i>n</i> = 317	NR	10
<b>Klarevas (2016)</b>	Six or more people fatally injured	1966–2015, <i>n</i> = 111	47	26
<b>Krouse and Richardson (2015)</b>	Public, did not involve other crimes, four or more people fatally injured	1999–2013, <i>n</i> = 66	NR	27
<b>Follman, Aronsen, and Pan (2020)</b>	Public, did not involve other crimes, four or more people fatally injured	1982–Jan 2019, <i>n</i> = 92	45–61 (or higher)	NR
<b>Capellan and Jiao (2019)</b>	Public, did not involve other crimes, attempted to kill four or more people	1966–2017, <i>n</i> = 318	NR	10–34
<b>Klarevas (2019)</b>	Public, did not involve other crimes, four or more people fatally injured	1966–2017, <i>n</i> = 43	NR	30
<b>Lankford and Silver (2020)</b>	Public, did not involve other crimes, eight or more people fatally injured	1966–2019, <i>n</i> = 34	NR	44
<b>de Jager et al. (2018)</b>	Active shooting	2000–2017, <i>n</i> = 248	NR	25
<b>Blau, Gorry, and Wade (2016)<sup>c</sup></b>	Mass shooting, spree shooting, or active shooting	1982–2014, <i>n</i> = 184	37	34

SOURCE: Information obtained from Blau, Gorry, and Wade (2016), de Jager et al. (2018), Capellan and Jiao (2019), Klarevas (2019), Koper (2020), and Lankford and Silver (2020).

NOTE: NR = not reported.

<sup>a</sup> An LCM is considered to be an ammunition feeding device capable of holding more than ten rounds of ammunition. Koper et al. (2018) includes incidents that involved gun models commonly sold with an LCM, even if the magazine recovered was not reported.

<sup>b</sup> There is no agreed-upon definition of assault weapon, and studies differed in how such rifles or weapons were defined. Most studies considered specific firearms based on federal definitions (Krouse and Richardson, 2015) or a combination of state and federal definitions (Klarevas, 2016, 2019; Koper et al., 2018); some studies (de Jager et al., 2018; Koper et al., 2018; Capellan and Jiao, 2019) considered upper bounds based on a broader definition to include all semiautomatic rifles. The exact definition used was unclear in some studies (Blau, Gorry, and Wade, 2016; Lankford and Silver, 2020).

<sup>c</sup> The criteria for incident inclusion used by Blau, Gorry, and Wade (2016) are somewhat unclear, but the authors appear to consider mass public shootings with four or more fatalities, public spree shootings with two or more fatalities, and active shooter incidents identified by the FBI.

Finally, a few 2018 and 2019 studies have described community-level characteristics associated with mass shooting incidence. County-level analyses of mass shootings (excluding felony-related mass shootings) from 1990 to 2015 show a higher incidence rate of mass shootings occurring in counties with higher levels of or increasing trends in income inequality (Cabrera and Kwon, 2018; Kwon and Cabrera, 2019a, 2019c), higher population density (Cabrera and Kwon, 2018; Kwon and Cabrera, 2019b, 2019c), higher levels of residential instability (Kwon and Cabrera, 2019b), and lower levels of civic engagement (Kwon and Cabrera, 2019b). However, these findings may simply reflect the fact that mass shootings are more likely to occur in more-populous urban areas where larger gatherings of people are likely to be found; these estimated associations do not clearly show a causal effect of economic or sociocultural conditions on mass shootings.

## Research on Policies That Might Reduce Mass Shootings

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The nature of mass shootings creates serious challenges for developing policies that will effectively prevent their occurrence. For instance, their rarity makes it difficult to extract generalizable information to identify useful predictors of risk. The low base rates of these events also ensure that policies targeting individuals based on risk factors would result in an extremely high rate of false positives; even the best available risk factors can identify only a subpopulation in which the risk of committing a mass shooting is on the order of one in a million. Finally, because individuals who perpetrate mass shootings often die by suicide (or expect to be killed by someone trying to stop the shooting), standard deterrence strategies used in crime prevention are unlikely to work; increasing the certainty or severity of punishments seems unlikely to be effective when the perpetrator already expects to die in the mass shooting.<sup>[17]</sup>

The relative rarity of mass shooting incidents, and particularly mass public shooting incidents, also makes it challenging to empirically assess whether existing policies are effective in preventing them. Since 2015, there has been an increase in published research that takes causal inference methods commonly used to evaluate policy effects on other forms of gun violence and applies these methods to study the effects of state firearm policies on mass shooting incidence or mass shooting fatalities.<sup>[18]</sup> However, mass shootings are sufficiently rare that the statistical assumptions of these methods rarely hold, threatening the validity of the effect estimates and statistical inference and potentially resulting in spurious effects (Xue et al., 2017).<sup>[19]</sup> In some cases, modeling rare outcome data with a large number of covariates can result in quasi- or complete separation, whereby one or more of the covariates perfectly predicts the outcome (Albert and Anderson, 1984).<sup>[20]</sup> Even if models do converge, the sparseness of these outcome data risk model overfitting and biased estimates. These issues are likely exacerbated in studies that adopt narrower definitions of mass shootings—for example, restricting the definition to mass public shootings or to mass public shootings involving a higher threshold of fatalities.

Even in studies that use models more appropriate for the distributional characteristics of mass shooting outcomes, the high degree of variability in mass shooting prevalence, injuries, and fatalities makes analyses of the effects of state policies on mass shooting outcomes subject to extremely low statistical power. Even if a state passed a policy that had large effects on mass public shootings (e.g., it cut the probability of such incidents in half), it is still unlikely that a study of that policy using appropriate statistical methods would find it to have a statistically significant effect. This occurs because most states already have zero mass public shootings in any given year, and, when the rate in the pre-period was already at, or very close to, zero, it is not possible to detect a decline in the risk of such shootings that is due to the policy—no matter how large that effect may be. This pervasive lack of statistical power can result in a published literature characterized by exaggerated effect sizes for any effects that are found to be statistically significant, and these significant estimates, in many cases, may misidentify the direction of the true effect (Gelman and Carlin, 2014).

Further complicating identification of the causal effects of policies on mass shootings is the potential issue of *reciprocal causation*; that is, high-profile mass shooting incidents may themselves prompt legislative changes. Luca, Malhotra, and Poliquin (2020) evaluated the association of mass public shooting occurrence in states with subsequent legislative activity related to firearms. Using data from 1989 to 2014, they found a 15-percent increase in the number of state firearm bills introduced in the year following a mass shooting; states with Democratic-

controlled legislatures did not show significant effects of firearm laws enacted, while states with Republican-controlled legislatures were significantly more likely to enact more-permissive gun laws subsequent to a mass public shooting incident in the state. If mass public shootings are a cause rather than (or in addition to) a consequence of firearm policy, models that fail to appropriately account for this reciprocal relationship may produce biased and misleading estimates of the effects of laws on mass shootings.

Given statistical challenges with accurately estimating the causal effects of a policy on mass shootings, we may be able to learn more about the potential for effective prevention strategies through detailed analyses of the characteristics of mass shootings (ideally for both incidents that occurred and incidents that are believed to have been averted) or through detailed review of how specific policies are being implemented in an effort to prevent mass shootings. Descriptive evidence that mass shootings involving firearms equipped with LCMs result in significantly higher injury and fatality rates may suggest potential benefits of restricting access to LCMs (Koper, 2020), although it may be that the choice to use LCMs reflects more-lethal intentions of the shooter (Kleck, 2016).<sup>[21]</sup> Similarly, evidence that many mass shooters have a history of domestic violence has led some to suggest potential benefits of stronger implementation of firearm prohibitions related to domestic violence (Zeoli and Paruk, 2020). Finally, although extreme risk protection orders are most commonly requested because of concerns about self-harm (Parker, 2015; Swanson et al., 2017, 2019), a detailed review of case records from 159 such orders issued in California found that 21 (13.2 percent) involved an individual who had access to or was planning to access firearms and expressed or exhibited behavior suggesting intent to perpetrate a mass shooting (Wintemute et al., 2019). These analyses do not directly assess the causal effect of policies on mass shooting outcomes, but they can still provide important insights for crafting and implementing policies.

## Conclusions

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It is difficult to make accurate generalizations about mass shootings. These challenges occur, in part, because (1) there are many different definitions for mass shootings, each of which may be useful for a somewhat different purpose; (2) we have incomplete data sources that do not track these events in a consistent manner over time, likely include a biased sample of incidents, and lack the full range of individual and incident characteristics researchers are interested in; and (3) there are statistical limitations inherent in trying to draw inferences from rare and idiosyncratic events. Using definitions that differ in their thresholds for the number and type of victims or the circumstances around the incident results in vastly different estimates of how often mass shooting events occur, how the rate has changed over time, and incident characteristics. Even across studies with a similar definition of a mass shooting, the different data sources (or combinations of data sources) used sometimes result in different findings. A comprehensive administrative data source that reliably captures mass shooting incidents with sufficient detail does not exist; relying on news reports alone is problematic because of well-established systemic bias in what gets reported. Although these issues create problems for understanding the prevalence and patterns of mass shootings at a given point in time, they are exacerbated when trying to understand how mass shootings have evolved over time; this is because of temporal variation in the completeness of underlying data sources that could be used to identify and classify incidents. There may be fewer concerns regarding incomplete or biased data when adopting a narrower definition of mass shootings that includes only the highest-profile incidents with multiple fatalities, but movement toward a more restrictive definition results in identifying a set of incidents that are increasingly rare and idiosyncratic. Thus, the researcher makes a trade-off that mitigates the serious problems with the underlying data but creates additional statistical problems resulting from a much smaller sample size that will not support accurate generalizations to a broader population of mass shooters.

Greater consensus about the number of mass shootings and how their prevalence has changed over time could likely be achieved by adopting a mass shooting definition based on objective criteria for which data are widely available. Defining incidents based on a threshold of fatalities rather than of nonfatal injuries is likely to produce more-reliable and more-comparable estimates over time. However, even a definition that includes nonfatal injuries is arguably preferable to one that requires having accurate data on victim-offender relationship, incident circumstances, or perpetrator motivations. These features, though captured in some administrative data sources and potentially identifiable through reviews of news reports or court and police records, are often subjectively

determined and are inconsistently available in the underlying data. Relative to the criterion of number of victims, assessment of whether a mass shooting incident was related to criminal activity or whether victims were selected randomly is more likely to be influenced by the perspective of the person reporting or recording the information. Depending on the purpose of the research, it may still be necessary to rely on these more-subjective characteristics. However, researchers may need to consider the extent to which they are studying the characteristics of the events themselves rather than, for instance, how the media covers these incidents.

Even if we did have definitive and complete data sources on the characteristics of all mass shooting incidents, it is still likely to be exceedingly difficult to identify useful predictors of mass shootings. With the exception of male sex, risk factors that appear to be overrepresented among mass shooters relative to the general population are often still uncommon among offenders on an absolute level. Thus, even if one could find a way to prevent individuals with a documented serious mental illness from committing a mass shooting—for example, developing and delivering effective treatments to more than 10 million Americans (Bose et al., 2018) or effectively preventing their access to firearms—most mass shootings would still occur because only a fraction of mass shootings are committed by individuals with a documented history of serious mental illness. Researchers are exploring novel machine learning approaches to using information on domestic violence dispatches or patterns of firearm acquisition for violence risk prediction (Berk and Sorenson, 2020; Laqueur and Wintemute, 2020), although the value of these approaches for predicting mass violence is still unknown. Other approaches focused on reducing the lethality of mass shootings may be effective in mitigating the harms of some incidents, even if the approaches do not prevent the occurrence of such incidents.

Finally, even if states and other jurisdictions developed and implemented policies that prevented mass shootings, there are several statistical challenges that make it unlikely that researchers will be able to demonstrate statistically significant benefits of the effective policies. The assumptions underlying many of the approaches commonly used to evaluate the effects of gun policies are likely not to be met when assessing effects on mass shooting incidence or lethality. The rare nature of mass shootings, and particularly mass public shootings, seriously limits statistical power for detecting policy effects, and studies that find statistically significant associations of policies with mass shootings may greatly overestimate the magnitude of these effects.

However, these difficulties should not impede policymakers from trying to develop and implement better policies. Mass shootings are tragic, traumatic, and shocking events. Because of that, they attract media attention and galvanize public opinion. However, they represent a very small fraction of the homicides in the United States. Precisely because mass shootings are so rare and it is so difficult to predict exactly who will perpetrate them, the overall costs and benefits of any policy to address them are likely to be driven by the policy's effects on a broader set of far more-common outcomes, such as overall homicide, suicide, domestic violence, and population health. Improved treatment for mental health problems or suicidality might reduce certain types of mass shootings, but such policies may also reduce far more-common forms of homicide, suicide, and crime and may also improve economic productivity and social well-being. Similarly, policies aimed at reducing domestic violence or preventing crime are worth pursuing for those benefits, and they may also reduce the incidence of some types of mass shootings (i.e., familicides, felony-related killings). Focusing efforts on implementing public policies that reduce violence more broadly, rather than making policy decisions based only on the most-extreme forms of such violence, may not eliminate mass shootings but may reduce their occurrence and lethality and ultimately save more lives.

### Mass Shootings

## **Notes**

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## Citation

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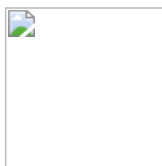
Rosanna Smart and Terry L. Schell, "Mass Shootings in the United States," in Rajeev Ramchand and Jessica Saunders, eds., *Contemporary Issues in Gun Policy: Essays from the RAND Gun Policy in America Project*, Santa Monica, Calif.: RAND Corporation, RR-A243-2, 2021, pp. 1–25. As of April 15, 2021: [https://www.rand.org/pubs/research\\_reports/RRA243-2.html](https://www.rand.org/pubs/research_reports/RRA243-2.html)

## Featured Researcher

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### **Rosanna Smart**

**Codirector, RAND Drug Policy Research Center**



Rosanna Smart is a senior economist at RAND, codirector of the RAND Drug Policy Research Center, and affiliate faculty of the Pardee RAND Graduate School. Her research is in applied microeconomics, with a focus on issues related to health behaviors, illicit markets, drug policy, and the...

# EXHIBIT 105

# Effects of Assault Weapon and High-Capacity Magazine Bans on Mass Shootings

[rand.org/research/gun-policy/analysis/ban-assault-weapons/mass-shootings.html](https://rand.org/research/gun-policy/analysis/ban-assault-weapons/mass-shootings.html)



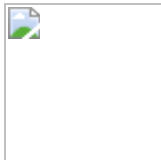
Updated January 10, 2023

Summary: Evidence for the effect of assault weapon bans on mass shootings is inconclusive. Evidence that high-capacity magazine bans may decrease mass shootings is limited.

## Key Findings

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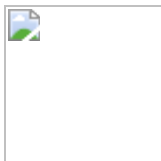
Assault weapon bans have uncertain effects on mass shootings.



Evidence for this relationship is inconclusive.

Studies with comparable methodological rigor identified inconsistent evidence for the policy's effect on an outcome, or a single study found only uncertain or suggestive effects. Read more about [how we determined the strength of gun policy analysis research](#).

High-capacity magazine bans may decrease mass shootings.



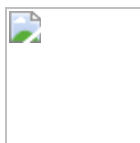
Evidence for this relationship is limited.

At least one study meeting our inclusion criteria and not otherwise compromised by noted methodological weaknesses reported a significant effect of the policy on the outcome, and no studies with equivalent or stronger methods provided contradictory evidence.

We identified six studies that met our inclusion criteria and estimated the effects of state or federal assault weapon bans on multiple-victim shooting incidents or casualties. Two of these (Klarevas, Conner, and Hemenway, 2019; Webster et al., 2020) contribute new findings to this updated review.<sup>[1]</sup> Each of these studies used different definitions of *mass shooting*, which we highlight in the following sections.

Gius (2015c) focused on *public mass shootings*, which the author defined as incidents resulting in four or more firearm-related fatalities (excluding the offender), and the shooting occurred in a public place, victims were selected indiscriminately, and the shooting was not related to criminal activity. Using a Poisson model and data from 1982 through 2011, Gius (2015c) tested whether state assault weapon bans influence these shooting fatalities or injuries, controlling for the federal assault weapon ban and state-level variation in demographic, socioeconomic, and criminal justice characteristics.<sup>[2]</sup> Findings showed that *state* assault weapon bans had a statistically significant but smaller effect of reducing mass shooting death rates to 55 percent of what would have been expected without the bans, but results indicated uncertain effects on mass shooting injuries (see the figure below). This report provided little detail describing variation in the timing of the state bans in relation to the

federal ban, and it is unclear whether the estimated effects were confounded by correlation between the state and federal bans. The model did not account for serial correlation in panel data, which can result in large biases in standard errors (Aneja, Donohue, and Zhang, 2014).



## **The Experts Weigh In**

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Compare expert opinions on how laws that ban assault weapons and high-capacity magazines may affect mass shootings in your state and the U.S. as a whole. »

Luca, Malhotra, and Poliquin (2016) set the same casualty threshold (four or more killed, not including the shooter) and also excluded incidents that occurred in connection with criminal activity, but they did not restrict incidents to public settings and excluded all events with fewer than three fatally injured victims who were not related to the shooter (e.g., family, romantic partner). Using a linear probability model and data from 1989 to 2014, the authors estimated the effects of state assault weapon bans on a binary indicator for whether a mass shooting occurred in a given state-year. In contrast to Gius (2015c), Luca, Malhotra, and Poliquin (2016) did not control for the federal assault weapon ban from 1994 through 2004, but they controlled for a host of other state-level gun policies; state fixed effects; year fixed effects; and state-level demographic, socioeconomic, and political characteristics. Their findings showed uncertain effects of state assault weapon bans on the probability of a mass shooting incident occurring. However, the effects of gun policies on mass shootings were not the primary focus of Luca, Malhotra, and Poliquin (2016), and the authors intended the estimates to serve solely as a robustness check for their main specification (the effects of mass shootings on gun policy). Although the paper provided limited information to use in evaluating the reported statistical models (e.g., on how these policies were coded), it is clear that the analysis used a linear model to predict a rare dichotomous outcome. Therefore, model assumptions were likely violated, making confidence intervals (CIs) unreliable.

Using data from 1984 to 2017, Webster et al. (2020) again set the same casualty threshold (four or more killed, not including the shooter) and excluded drug- or gang-related shootings; they did not exclude domestic-related incidents, but conducted sensitivity analyses stratified by this characteristic. In negative binomial models including 14 laws, state fixed effects, linear and quadratic time trend terms, and 14 social and economic state covariates, the authors found uncertain evidence that assault weapon bans were associated with mass shooting incidents or deaths. However, they found that states with high-capacity magazine bans had a significant 48-percent reduction in mass shooting incidents, and a suggestive 33-percent reduction in mass shooting fatalities. Because the number of incidents and fatalities is quite low over this period, maximum likelihood estimates like those used in this study may be biased (Kenne Pagui, Salvan, and Sartori, 2022).

Focusing on high-fatality mass shootings that resulted in six or more firearm fatalities, not including the shooter, Klarevas, Conner, and Hemenway (2019) evaluated the effects of high-capacity magazine restrictions from 1990 to 2017. They used logistic regression for mass shooting incidents and negative binomial models for counts of deaths in models with state fixed effects, a continuous term for year to account for temporal trends, and state-level time-varying covariates. When state and federal restrictions were combined, the authors found that the laws were significantly associated with fewer incidents and deaths in mass shootings generally, and in those that involved a high-capacity magazine specifically. However, the effect sizes reported were improbably large, ranging from reductions of 72 percent of all incidents to 99.7 percent of all deaths. Similarly large point estimates were reported for the effects of state restrictions alone, which were significant for mass shootings involving a high-capacity magazine, and suggestive for the wider set of all mass shootings. There were, however, just 69 high-fatality mass shooting incidents (44 involving a high-capacity magazine) over the entire 27-year study period; with only 69 incidents and 63 estimated parameters, estimated law effects are likely biased because of the sparsity of the outcome (Kenne Pagui, Salvan, and Sartori, 2022).

Blau, Gorrry, and Wade (2016) considered a broader set of incidents, including mass public shootings with a minimum of four fatalities occurring during a single incident and perpetrated by a single offender; spree shootings occurring across multiple locations in a public place with a minimum of two fatalities; and active shooter incidents, which involve an individual using a firearm and actively killing or attempting to kill others in a confined space or unconfined and populated area. They used a linear probability model to estimate how a variety of gun laws, including state and federal assault weapon bans, relate to the probability of a public shooting incident occurring based on data covering 1982 to 2013.<sup>[3]</sup> Controlling for state fixed effects and a linear time trend, as well as for the presence of several other state gun laws and a limited set of state covariates (i.e., population size and aggregated personal income), the authors found that state assault weapon bans were significantly and negatively associated with the likelihood of a public shooting event. However, the use of a linear model to predict a dichotomous (and rare) outcome likely violated model assumptions and rendered the results unreliable. The authors' estimated linear probability model can yield predicted probabilities of active shooting incidence that extend far outside the definitional 0 to 1 range of a probability depending on the particular combination of policies present in a given state. Moreover, the estimated model implies negative IRRs, which represent implausible effect sizes, for some of the gun policies that we are studying.<sup>[4]</sup> This indicates a serious model misspecification (Cox and Snell, 1989; Aldrich and Nelson, 1984) and prevents us from interpreting the estimated coefficients as causal effect estimates.






Gius (2018) analyzed school shooting deaths and injuries using data compiled from Klein (2012), Kalesan et al. (2017), and the Everytown for Gun Safety Support Fund. Using a model similar to that in Gius (2015c), this study evaluated whether federal or state assault weapon bans influence school shooting fatalities or injuries, controlling for background check

laws, state-level variation in demographic and socioeconomic characteristics, and state-level variation in the ratio of firearm suicides to total suicides as a proxy for variation in gun ownership prevalence. The study showed that the presence of a state or federal assault weapon ban between 1990 and 2014 was significantly associated with a 54-percent reduction in the number of school shooting victims (see the figure below). However, it is unclear the extent to which this estimate was identified from the change in the federal law versus from changes in state policy. Additionally, the author did not appear to make adjustments to standard errors to account for serial correlation in panel data, which may lead to overstated precision of the estimates.

The figure below displays the incidence rate ratios (IRRs) and CIs associated with the assault weapon ban policies examined in these studies. We exclude estimates of the federal assault weapon ban from Gius (2015c) and from Blau, Gorry, and Wade (2016) because they do not meet our criteria for inclusion. We also exclude estimates of effects of state assault weapon bans from Blau, Gorry, and Wade (2016), given the concerns with the study results noted earlier.

## Incidence Rate Ratios Associated with the Effect of Assault Weapon Bans on Mass Shootings

This forest plot shows estimates of how bans on the sale of assault weapons and high-capacity magazines affect mass shootings, based on the evidence in the studies examined. In particular, the graphic shows the standardized effect sizes (or IRRs) and their 95-percent CIs for each outcome. An effect size of 1.00 indicates that, after a state passes the law, we would expect the outcome (e.g., suicide or firearm suicide) to be unaffected. An effect size of less than 1.00 indicates that the law appears to reduce the outcome. For example, if the effect size were 0.92, we would expect the rate of the outcome to fall to 0.92 times the rate prior to passage of the law. Conversely, an effect size of more than 1.00 indicates that the law appears to increase the outcome by a factor equivalent to the effect size value. When the CIs do not include the value of 1.00, the estimated effect is statistically significant at  $p < 0.05$ .

Study, by Policy	Outcome Measure	Effect Size (IRR) [95% CI]	
<b>Assault weapon ban</b>			
Gius (2018) We have significant methodological concerns about this study.	Number of deaths & injuries from school shootings	0.46 [0.33, 0.63]	
Luca, Malhotra, & Poliquin (2016) We have significant methodological concerns about this study.	Any mass shooting incident	1.52 [0.60, 2.43]	
<b>State assault weapons ban      Mass shooting</b>			
Webster et al. (2020) We have no significant methodological concerns about this study.	Incidents	0.71 [0.34, 1.48]	
Gius (2015c) We have significant methodological concerns about this study.	Deaths	0.55 [0.33, 0.92]	
Webster et al. (2020) We have no significant methodological concerns about this study.	Deaths	1.11 [0.30, 4.16]	



Study, by Policy	Outcome Measure	Effect Size (IRR) [95% CI]	
Gius (2015c) We have significant methodological concerns about this study.	Injuries	1.35 [0.81, 2.23]	—
<b>Large-capacity magazine ban</b>	<b>Mass shooting</b>		
Webster et al. (2020) We have no significant methodological concerns about this study.	Incidents	0.52 [0.27, 0.98]	—●—
Klarevas, Conner, & Hemenway (2019) We have significant methodological concerns about this study.	Incidents, high-fatality	0.28 [0.12, 0.66]	—○—
Webster et al. (2020) We have no significant methodological concerns about this study.	Deaths	0.30 [0.08, 1.10]	—●—
Klarevas, Conner, & Hemenway (2019) We have significant methodological concerns about this study.	Deaths, high-fatality	0.03 [0.00, 0.00]	○
<b>State large-capacity magazine ban</b>	<b>Mass shooting</b>		
Klarevas, Conner, & Hemenway (2019) We have significant methodological concerns about this study.	Incidents, high-fatality	0.28 [0.05, 1.53]	—○—
Klarevas, Conner, & Hemenway (2019) We have significant methodological concerns about this study.	Deaths, high-fatality	0.05 [0.00, 2.90]	○—

0.0 1

**NOTE:** IRR values marked with empty circles indicate that we identified concerns with the study's methodology, and these concerns are described in the text above. Filled circles indicate that we identified no significant methodological concerns. An arrow on either end of a CI indicates that the interval is wider than can be displayed on the scale.

## Conclusions

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We identified five qualifying studies that estimated the effects of state assault weapon bans on different aspects of mass shootings. Gius (2015c) found that these bans significantly reduce mass shooting deaths but have uncertain effects on injuries resulting from mass shootings. Using similar models, however, Gius (2018) found that assault weapon bans resulted in significantly fewer casualties (deaths and nonfatal injuries) from school shootings. Using a data set similar to that used in Gius (2015c), Luca, Malhotra, and Poliquin (2016) found uncertain effects of state assault weapon bans on the annual incidence of mass shootings. Blau, Gorry, and Wade (2016) found that the bans significantly reduced the annual incidence of mass shootings. Webster et al. (2020) found uncertain evidence of state assault weapon bans on mass shooting incidents and fatalities. Considering our assessment of these findings and the relative strengths of these studies, we find *inconclusive evidence for the effect of assault weapon bans on mass shootings*.

We also identified two studies that examined the effects of high-capacity magazine bans on mass shootings. Webster et al. (2020) found significant or suggestive associations between these state bans and lower rates of mass shooting incidents. Klarevas, Conner, and Hemenway (2019) also found that state-level high-capacity magazine bans were associated with fewer mass shootings and deaths in incidents in which a high-capacity magazine was used, as well as suggestive reductions in all mass shooting incidents and deaths (including those that did not involve a high-capacity magazine). Considering our assessment of these findings and the relative strengths of these studies, we find *limited evidence that high-capacity magazine bans reduce mass shootings*.

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## Notes

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1. We exclude DiMaggio et al. (2019), who studied the federal assault weapon ban, determining that the study does not meet our inclusion criteria because of the absence of a comparison group. Although the authors focus on an outcome defined as the proportion of all firearm homicide deaths that occurred during mass shootings, this is not equivalent to having a comparison group; mass shooting deaths are included in both the numerator and the denominator. Furthermore, the use of firearm homicides as a comparison group has obvious methodological problems, given that the assault weapon ban (as well as other 1994 legislation passed coincident to the assault weapon ban) might be expected to affect firearm homicide rates. [Return to content ↑](#)

2. The author found a large and statistically significant association between implementation of the federal assault weapon ban and reductions in mass shooting deaths and injuries. However, because the model included an indicator for years prior to and after the federal ban as a control but there was no comparison group, the analysis of the federal ban does not meet our criteria for inclusion. [Return to content ↑](#)
3. The model included an indicator for the period of the federal ban, but because the federal ban applied to all states, there was no comparison group. Thus, the analysis of the federal ban does not meet our criteria for inclusion. [Return to content ↑](#)
4. For example, the model coefficient for stand-your-ground laws implies an IRR of  $-2$ , with a 95-percent CI that lies entirely in the negative IRR range. [Return to content ↑](#)

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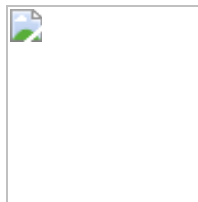
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## Featured Researcher

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### **Rosanna Smart**

**Codirector, RAND Drug Policy Research Center**



Rosanna Smart is a senior economist at RAND, codirector of the RAND Drug Policy Research Center, and affiliate faculty of the Pardee RAND Graduate School. Her research is in applied microeconomics, with a focus on issues related to health behaviors, illicit markets, drug policy, and the...

# EXHIBIT 106

## Guns, laws and public shootings in the United States

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### ABSTRACT

Since the late 1990s, there have been increasing numbers of public shootings carried out with firearms in the United States. These tragedies continually renew the regulatory debate concerning public safety while considering civil liberties. Using a unique data set, we investigate whether laws correspond to whether an event occurs and the effects of event-specific characteristics on public shooting outcomes. In particular, we analyse how state-specific gun laws, the types of firearms, the shooting venues and the mental health of the gunman impact the outcomes of public shootings. Results show that most gun laws are unrelated to whether an event occurs. In addition, common state and federal gun laws that outlaw assault weapons are unrelated to the likelihood of an assault weapon being used during a public shooting event. Moreover, results show that the use of assault weapons is not related to more victims or fatalities than other types of guns. However, the use of hand guns, shot guns and high-capacity magazines is directly related to the number of victims and fatalities in a public shooting event. Finally, the gunman's reported mental illness is often associated with an increase in the number of victims and fatalities.

### KEYWORDS

Guns; public shootings; gun control; gun laws

### JEL CLASSIFICATION

K10; K40

### 1. Introduction

Public shootings prompt renewed debates about gun control with calls for legislation and regulations to limit the types and availability of firearms. After the shootings at Sandy Hook Elementary, President Obama vowed to 'use whatever power [his] office holds' to prevent future tragedies.<sup>1</sup> While most people would agree that preventing future tragedies is a worthy goal, policymakers disagree on the best course of action to take in order to achieve this goal. This comes as no surprise since there is little research on what policies or factors affect the outcomes of public shootings. However, given that shooting events are increasing over time (see Figure 1), this type of research is pertinent.

Although changes in gun legislation have been slow to evolve, in 2013 President Obama signed into law the Investigative Assistance for Violent Crimes Act of 2012. The act provided the attorney general the authority to assist in investigations of public shooting events occurring in a place of public use and active shooter events at the request of state

law enforcement officials. On 5 January 2016, President Obama proposed an updated strategy to reduce gun violence in America. The strategy focuses on new background check requirements to increase the effectiveness of the National Instant Criminal Background Check System and to enhance the education and enforcement of existing state gun laws.<sup>2</sup> Some policymakers favour expanded gun legislation, such as an assault weapons ban, a limit on high-capacity magazines or expanded background checks. However, little is known about the effect of existing regulations on public shooting outcomes. Others point to mental illness as an explanation for these tragic events. Yet there is little research on how the presence of mental illness influences the outcomes of public shootings. This article addresses these unanswered questions. Indeed, the results from our study have important implications as policymakers move forward to prevent future tragedies.

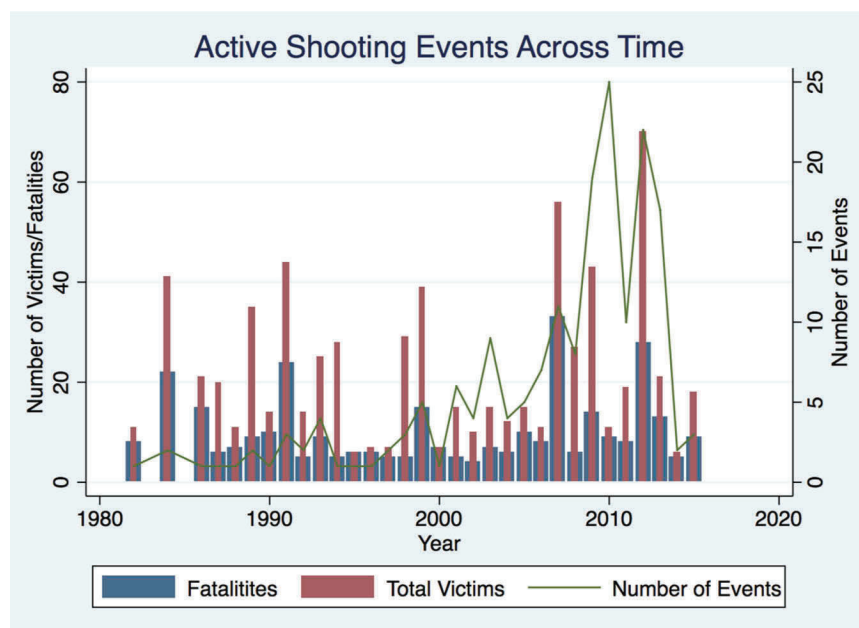
While gun violence arises out of sociocultural, educational, behavioural and product safety issues which transcend simply gun ownership, gun

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<sup>1</sup><http://www.nytimes.com/2012/12/17/us/politics/bloomberg-urges-obama-to-take-action-on-gun-control.html>

<sup>2</sup><http://www.ncsl.org/research/civil-and-criminal-justice/summary-president-obama-gun-proposals.aspx>

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**Figure 1.** Distribution of events.

violence and, specific to the current analysis, many public shootings are arguably random events. Given the random and uncertain nature of tragic events like Sandy Hook, Aurora, Columbine and most recently at Umpqua Community College in October of 2015, the question arises as to whether or not public policy can have the same impact on a random act of mass violence as public policy has had on other areas of concern (Mozaffarian, Hemenway, and Ludwig 2013).

Policymakers across the political spectrum have variations of opinions on public policy and the impact the regulations or laws would have on the occurrence of these uncertain events. Some policymakers emphasize that a breadth of tougher gun laws would have prevented these random acts of violence or at the very least reduced the severity of the event. Counter to this argument, pro-gun or anti-control policymakers disbelieve gun controls have any preventive efficacy. Other pundits indicate the public shootings could have been prevented or the severity of the event would have been dramatically reduced through site-specific security. Given the breadth of the political debate and public opinion, the question still remains whether gun ownership regulation, gun and ammunition control, background checks and owner education have any effect on the damages caused by public shootings.

In this article, we analyse the outcomes of public shooting events using a unique panel data series of U.S. states from 1982 to 2014. The data include 184 public shootings over the last 31 years. Using these data, we create a state panel over time to test whether gun laws are associated with occurrences of public shootings. We find that most laws have little correlation with whether an event occurs. The one consistent finding is that state assault weapons laws show a negative correlation with active shooter events.

We then look at a cross section of public shootings to test whether gun laws, particularly laws that restrict or regulate weapons that are collectively classified in the National Firearms Act of 1968 (NFA) as assault-type weapons, impact whether assault weapons are used in public shootings. We find that state laws such as the NFA restrictions, as well as the federal assault weapons ban, have no effect on whether an assault weapon is used in a public shooting. In addition, using data on the weapons used in each public shooting, we analyse whether the types of guns as well as the number of guns used during a public shooting is associated with the resulting number of victims and fatalities. Our results indicate that assault weapons use is not associated with more victims or fatalities. Additional assault guns are also not associated with more victims than other types of guns and have no significant



relationship with fatalities. The use of high-capacity magazines, hand guns and shotguns, however, are consistently associated with more victims and more fatalities during a given public shooting.

Finally, we analyse whether the mental health status of the gunman affects the number of victims and fatalities. Our data contain information on whether the gunman had been diagnosed with mental illnesses, whether he had taken medication and whether he was currently off the medication at the time of the shooting. Overall, the mental health of the gunman is positively correlated with the number of victims and use of depression medication is positively correlated with both the number of victims and the number of fatalities.

This article provides an important contribution to our understanding about laws associated with public shootings and their outcomes. Many papers have researched the determinants of gun crime more broadly. For example, Duggan (2001) uses gun magazine subscriptions as a proxy for gun ownership to show that more guns are associated with increased crime. Other papers show that economic factors such as unemployment rates and incomes are associated with crime rates (Becker 1968; Corman and Mocan 2005; Gould, Weinberg, and Mustard 2002; Raphael and Winter-Ebmer 2001). Another strand of literature evaluates the effects of gun legislation on crime. Kwon et al. (1997), for example, find that states with restrictions such as licence requirements and waiting periods have fewer gun deaths, but the result is not significant in statistical terms. Lott and Mustard (1997) and Moody (2001) show that right to carry laws lead to less violent crime, but others find conflicting evidence (Ayres and Donohue 2003; Duggan 2001; Olson and Maltz 2001). In another study, Kwon and Baack (2005) form a comprehensive measure of gun control legislation and find that this measure is associated with fewer gun-related deaths. The objectives in these papers are focused solely on gun crime. We extend this literature by specifically examining the determinants and factors that affect whether a public shooting occurs and public shooting outcomes.

Other studies have examined public shootings. For instance, Chapman et al. (2006) look at the effects of broad gun reforms that removed semi-automatic guns, pump-action shotguns and rifles from civilian possession in Australia on gun violence, including public shootings. They find that the reforms were associated with a sharp decline in public shootings. Additionally, Duwe, Kovandzic, and Moody (2002) and Lott and Landes (2000) look at whether right to carry laws influence public shootings in the United States. Our analysis extends the literature by analysing a large panel to test the relation between many gun laws and public shootings. Our article also looks at whether state and federal assault weapon bans influence whether or not these types of weapons were used in the cross section of public shootings. Finally, our analysis extends previous work by looking at the cross-sectional data to estimate how event-specific characteristics influence the outcomes of public shootings.

This article proceeds as follows: Section II describes the data used in the analysis, Section III details the results, and Section IV concludes.

## II. Data description

The shooting event data were obtained and cross-referenced from multiple publically available data sources.<sup>3</sup> We identify 184 shooting events between 1982 and October 2015 as mass shootings, spree shootings or active shooter events. We follow the FBI's definition in defining each type of shooting event. 'Mass' shootings are defined based on the following: (1) shootings were carried out by a single gunman, (2) shootings happened during a single incident and (3) shootings occurred in a public place with a minimum of four fatalities.<sup>4,5,6</sup> 'Spree' shootings are defined as (1) shootings were carried out by a single gunman, (2) shootings happened across multiple locations with no break in time between the shootings and (3) shootings occurred in a public place with a minimum of two fatalities.<sup>4,5,6</sup> An 'Active shooter' incident is defined as (1) an individual actively engaged in killing or attempting to kill people, (2)

<sup>3</sup>The Stanford Mass Shootings of America (MSA) data project, the Global Terrorism Database, a compiled data set by Follman, Aronson, and Pan (2012), and the Department of Justice's study on active shooter incidence in the United States.

<sup>4</sup>Serial Murder: A Multi-Disciplinary Perspective for Investigators. The Federal Bureau of Investigations. <https://www.fbi.gov/stats-services/publications/serial-murder/serial-murder-july-2008-pdf>.

<sup>5</sup>The exception of a 'single' gunman is the case of the Columbine massacre and the Westside Middle School killings, both of which involved two shooters.

<sup>6</sup>The gunman is excluded in the victim count.



shooting occurs in a confined/unconfined and populated area and (3) the subject's criminal actions involve the use of firearms.<sup>7</sup>

Data specific to the mass shooting include location (city and state), date of the mass shooting, the number of fatalities, the number of non-fatal victims and the venue of the mass shooting. Data specific to the gunman in the mass shooting include race, gender, age, prior signs of mental illness, known prescribed mental illness medication, prescribed medicine adherence at the time of the mass murder, suicide by the gunman, whether police killed the gunman and whether the gunman was arrested. Data specific to the weapons used in the mass murder include whether the weapon was obtained legally, the type of weapon used, the number of each type of weapon and the capacity of the ammunition magazine(s).

We obtain state-specific gun law data from each state's Department of Public Safety (or related department as the name varies by state), the United States Bureau of Alcohol, Tobacco, and Fire Arms and the United States Code of Federal Regulations (CFR) Title 27, Part 1 sub-chapter C. Nine different state-specific gun laws are included in our analysis as well as the federal ban on assault weapons. These are described in detail as follows.

### ***Assault weapons ban***

Federal regulation which bans the possess, import or purchase assault weapons or cosmetic features that would classify a firearm as an assault weapon, except for those already in lawful possession at the time of the law's enactment. The Federal Assault Weapons Ban of 1994 defined certain firearms as assault weapons based on the features they possessed (Public Safety and Recreational Firearms Use Protection Act, H.R.3355, 103rd Congress (1993–1994)).

### ***Assault weapons law***

The federal assault weapons ban expired in 2004; however, several states either fully adopted or have modified the definitions of the 2004 law. Seven states and the District of Columbia have enacted assault

weapon bans or restrictions with various definitions and criteria.

### ***Purchase permit***

A certificate, identification card or other permit (terminology varies state by state) is required to acquire/purchase any lawful firearm.

### ***Gun registration***

Requires gun owners to record the ownership of their firearms with a designated law enforcement agency.

### ***Licence requirement***

Requires a state licence to possess a lawful firearm.

### ***Concealed carry permit (CCW)***

Permits the carry of a lawful firearm in public in a concealed manner on one's person or in close proximity. Requirements for CCW vary widely by state with a typical permit requiring residency, minimum age, submitting fingerprints, passing a computerized instant background check (or a more comprehensive manual background check), attending a certified handgun/firearm safety class, passing a practical qualification demonstrating handgun proficiency and paying a required fee.

### ***Open carry***

Permitting the carry of a lawful firearm in public in an open manner where a casual observer can observe an individual carrying a firearm. Similar to a CCW, requirements for open carry vary widely by state with a typical permit requiring the same standards listed above for CCW.

### ***NFA restrictions***

The National Firearms Act of 1968 defines a number of categories of regulated firearms which are collectively known as NFA firearms. These range from the

<sup>7</sup>A Study of Active Shooter Incidents in the United States between 2000 and 2013. The United States Department of Justice and the Federal Bureau of Investigation. <https://www.fbi.gov/news/stories/2014/september/fbi-releases-study-on-active-shooter-incidents/pdfs/a-study-of-active-shooter-incidents-in-the-u.s.-between-2000-and-2013>.

firing capacity (semi and full automatic) of a firearm, the length of the firearm barrel, suppression devices and ancillary devices considered destructive devices (i.e. grenades, bombs, explosive missiles, poison gas weapons and other comparable devices).

### ***Peaceable journey law***

Regulates the transport a firearm for any lawful purpose from any place where he may lawfully possess and carry such firearm to any other place where he may lawfully possess and carry the firearm if, during transportation, the firearm is unloaded, and neither the firearm nor any ammunition being transported is readily accessible or is directly accessible from the passenger compartment of such transporting vehicle.

### ***Stand your ground***

Legal concept that a person may justifiably use force in self-defence when there is reasonable belief of an unlawful threat at any location, without an obligation to retreat first. This is analogous to the Castle doctrine, stating that a person has no duty to retreat when their home is attacked.

Figure 1 shows the distribution of events in our data. The wide bars illustrate average fatalities over time, the narrow bars illustrate the average number of victims over time and the line illustrates the number of events over time. It is clear that the number of events has increased in recent history, although the severity of events as measured by the number of fatalities and victims does not show a clear trend.

Table 1 reports statistics that describe the sample of state-year data. We include all 50 states as well as Washington D.C.<sup>8</sup> With 51 states and 33 years of observable data, we have 1683 state-year observations. In addition to whether an event occurs, we also report *Population*, which is the state population according to the U.S. Census, and *Income*, which is the aggregate level of personal income gathered from the U.S. Bureau of Economics Analysis. We then create indicator variables that capture whether or not a state had one of each of the gun laws during a particular year.

**Table 1.** Summary statistics: panel data (obs. = 1683).

	Mean	Standard deviation	Min	Max
Active shooter event	0.09	0.29	0	1
Population (million)	5.39	6.01	0.45	38.8
Income (billion USD)	157	0.22	0.01	1.94
Year	1998	9.52	1982	2014
Purchase permit	0.27	0.45	0	1
Gun register	0.12	0.32	0	1
Assault law	0.13	0.33	0	1
Licence requirement	0.10	0.30	0	1
CCW permits	0.88	0.32	0	1
Open carry	0.71	0.46	0	1
NFA restrictions	0.39	0.49	0	1
Peaceable journey law	0.43	0.50	0	1
Stand your ground	0.78	0.42	0	1
AR-Ban	0.30	0.46	0	1

Table 1 shows that a shooting event occurred in approximately 9% of the state-year observations. The mean state population during that time was 5.39 million and aggregate personal state income totalled \$157 million. The gun law indicators show for what fraction of state-year observations various gun laws held. For example, only 10% of the state-year observations had licence requirements while 88% of the observations required CCW permits.

For the 184 shooting events that occurred in the United States between 1982 and 2014, we also gather information particular to each event. This information is summarized in Table 2. Outcome variables include the number of individuals that were injured or killed (*Victims*) and the number of fatalities (*Fatalities*). Explanatory variables include the age of the gunman (*Age*), an indicator variable capturing whether the gunman was a minority (*Minority*) and an indicator variable for whether there were reported signs that the gunman suffered from possible mental illness (*Mental Illness*). We also gather data on the venue of the mass shooting. *School* and *Workplace* are indicator variables for whether the mass shooting occurred at a school or workplace. To examine cultural influences on violence, we include a variable *Culture of Honour* defined by states in the Southern United States which are considered honour states. A culture of honour is a culture where people avoid intentionally offending others and maintain a reputation for not accepting improper conduct by others. Brown et al. (2009) show that culture of honour states are more likely to have students carry weapons to school and are more likely to experience school shootings.

<sup>8</sup>We note that results reported in this study are qualitatively similar when we exclude Washington D.C. and just use the 50 states.

**Table 2.** Summary statistics: cross-sectional data (obs. = 184).

	Mean	Standard deviation	Min	Max
Victims	8.82	9.73	0	70
Fatalities	4.23	4.72	0	33
Age	36.64	15.14	12	89
Minority	0.36	0.48	0	1
Mental Illness	0.46	0.50	0	1
Use Depression Med	0.14	0.35	0	1
Off Depression Med	0.09	0.29	0	1
School	0.22	0.42	0	1
Workplace	0.54	0.50	0	1
Culture of Honour State	0.67	0.47	0	1
Year	2006.14	7.16	1982	2015
Arrested	0.37	0.48	0	1
Police	0.20	0.40	0	1
Legal Gun	0.87	0.34	0	1
#Guns	1.80	1.19	1	9
#Handguns	1.05	0.79	0	4
#Revolvers	0.14	0.49	0	5
#Shotguns	0.28	0.52	0	2
#Assault Guns	0.34	0.53	0	2
D_Handguns	0.78	0.41	0	1
D_Revolvers	0.11	0.31	0	1
D_Shotguns	0.24	0.43	0	1
D_Assaultguns	0.31	0.46	0	1
High Capacity Magazine	0.37	0.48	0	1
Purchase Permit	0.38	0.49	0	1
Gun registration	0.22	0.42	0	1
Assault weapon law	0.26	0.44	0	1
Licence requirement	0.08	0.27	0	1
CCW permits	0.84	0.37	0	1
Open carry	0.83	0.38	0	1
NFA restrictions	0.48	0.50	0	1
Peaceable journey laws	0.34	0.47	0	1
Stand your ground	0.83	0.38	0	1

From various reports, we also obtain data on the guns used during the mass shooting. *Legal Gun* is an indicator variable for whether the gun (or guns) used by the gunman at the mass shooting was obtained legally. Specifically, *Legal Gun* includes (according to state law) if the firearm(s) was/were registered, if a permit was required for ownership and/or if a licence was required for ownership. As part of the legal purchase of a firearm, FBI instant background checks are required of all purchasers. The expectation to the background check regulation is the Private Sale Exemption, otherwise known as the widely debated ‘Gun Show Loophole’. Under federal law, private-party sellers are not required to perform background checks on buyers, record the sale or ask for identification. However, according to a National Institute of Justice, the research arm of the U.S. Department of Justice, study, only 2% of criminal

guns come from gun shows.<sup>9</sup> As of September 2015, 18 states and Washington D.C. have background check requirements beyond federal law. Eight states require universal background checks at the point of sale for all transfers, including purchases from unlicensed sellers.

More detailed weapon information reported in Table 2 includes the total number of guns at the scene (*#Guns*), the number of handguns (*#Handguns*), the number of revolvers (*#Revolvers*), the number of shot guns (*#Shotguns*) and the number of assault weapons (*#Assault Guns*).<sup>10,11</sup> We also create indicator variables for the various gun types used in the sample of mass shootings. *D\_Handgun*, *D\_Revolvers*, *D\_Shotguns* and *D\_Assaultguns* indicate that a hand gun, revolver, shot gun or assault weapon was used during the mass shooting, respectively. In addition to the gun types, we create an indicator variable for whether a high-capacity magazine (*High Capacity Magazine*) was used. We define a high-capacity magazine according to the commonly accepted definition used under the United States’ Federal Assault Weapons Ban, which expired in 2004, as a magazine capable of holding more than 10 rounds of ammunition. In addition to the information about the gun types, Table 2 also includes indicator variables that capture the nine common gun laws in each state where a mass shooting occurred.

Table 2 shows that the mean number of victims is 8.82 while the mean number of fatalities is 4.23. We note that the minimum number of fatalities is 0.00 as we have included not only mass and spree shootings but active shooter incidences which by definition do not require a fatality. The average age of a gunman is slightly over 36. Approximately 36% of gunmen were minorities and more than 46% of gunmen had possible signs of mental illness. This latter summary statistic suggests that policymakers and regulators might attempt to address mental health issues in an attempt to deter the number of active shooting incidences. We further explore this possibility below.

<sup>9</sup>Homicide in eight US cities: Trends, Context, and Policy Implications. National Institute of Justice, U.S. Department of Justice. [https://www.ncjrs.gov/pdffiles1/ondcp/homicide\\_trends.pdf](https://www.ncjrs.gov/pdffiles1/ondcp/homicide_trends.pdf).

<sup>10</sup>Handgun (27 CFR 478.11). (a) Any firearm which has a short stock and is designed to be held and fired by the use of a single hand; and (b) Any combination of parts from which a firearm described in paragraph (a) can be assembled.

<sup>11</sup>Revolver (27 CFR 478.11). A weapon originally designed, made, and intended to fire a projectile (bullet) from one or more barrels when held in one hand, and having (a) a chamber(s) as an integral part(s) of, or permanently aligned with, the bore(s); and (b) a short stock designed to be gripped by one hand and at an angle to and extending below the line of the bore(s).

Table 2 also shows that 22% of active shooter events occurred at schools and 54% occurred at places of work. The remaining 24% of events did not occur at one of these two venues. We found that 67% of active shooter incidences occurred in states which are considered to have a culture of honour. In Table 2, we also find that 87% of guns used in the cross section of mass shootings were obtained legally. The average total number of guns used by a gunman is 1.80, the average number of handguns used is 1.05, the average number of revolvers used is 0.14, the average number of shotguns used is 0.28 and the average number of assault weapons used is 0.34. These simple statistics suggest that hand guns are used the most and nearly three times as much as assault weapons, which is the second most commonly used gun type in the sample. When examining the gun-type indicator variables, at least one hand gun was used 78% of the time, while revolvers were used 11% of the time, shotguns were used 24% of the time and assault weapons were used approximately 31% of the time. High-capacity magazines were used in 37% of active shooter events.

Table 2 also reports the summary statistics for the nine common state gun laws that were in existence during the year the mass shooting occurred. We find that nearly 38% of events took place in states that required purchase permits, 22% in states that required the registration of fire arms, 26% in states that had an assault weapons law, 8% in states that had licence requirements, 84% in states that had conceal and carry permit laws, 83% in states that had open carry laws, 48% in states that had restrictions on NFA-classified weapons, 34% in states that had peaceable journal laws and 83% in states that had stand your ground laws and the time of the mass shooting.

### III. Empirical results

In this section, we present our empirical results. First, we examine how state-specific characteristics such as population, income and gun laws affect the likelihood of an active shooter event in a particular state during a particular year. Second, we determine whether certain gun laws targeting the prohibition of assault weapon use affect the likelihood that assault weapons were used in an active shooter event. Third, we examine cross-sectional factors that explain the

number of victims and the number of fatalities during an event by focusing on the types of guns used by the gunman as well as the mental health of the gunman.

#### Predictors of mass shootings

We begin by examining characteristics that influence the likelihood of an active shooter event in a particular state during a particular year. Utilizing the panel data set described above, we estimate the following equation with a probit regression.

$$\begin{aligned} Event_{i,t} = & \gamma_0 + \theta_{j,i,t} \sum_{j=1}^{10} GunLaws_{i,t} \\ & + \gamma_1 PersIncome_{i,t} \\ & + \gamma_2 Population_{i,t} + \gamma_3 Year_t + \varepsilon_i \\ & + \eta_{i,t} \end{aligned} \quad (1)$$

*Event* is equal to one if an active shooter event occurred in state *i* during year *t*, zero otherwise. The independent variables include nine indicator variables that capture whether a particular gun law existed in state *i* during year *t* as well as a dummy variable capturing the time period when the federal ban on assault rifles existed from September 1994 to September 2004 (*AR-Ban*). We also include state aggregated personal income in \$ billions (*Income*) and state population in millions (*Population*). In order to control for any time trend in active shooter events, we include a count variable *Year*, which equals the year of a particular observation. Finally, we include state fixed effects to account for omitted time invariant variables ( $\varepsilon_i$ ).

Table 3 reports the marginal effects from estimating variations of Equation (1) with robust standard errors clustered by state. Column 1 reports the probit regression results when we only include the gun law indicator variables. The first important result is that 7 of the 10 indicator variables produce estimates that are not statistically different from zero. We note that the indicator variable *Assault Law* produces a negative and significant coefficient while *AR-Ban* and *Stand Your Ground* produce positive and significant estimates. These results indicate that state assault weapon bans are associated with a lower likelihood of an active shooter event while the federal assault weapons ban and stand your ground laws are associated with an increase in the probability of an event. When we



**Table 3.** Determining active shooter events: effect of gun laws.

	1	2	3
AR-Ban	0.078** (0.034)	0.004 (0.020)	-0.068** (0.032)
Assault Law	-0.042*** (0.016)	-0.022* (0.012)	-0.045** (0.018)
Purchase Permit	-0.006 (0.036)	-0.024 (0.016)	0.372 (0.358)
Gun register	0.059 (0.061)	-0.007 (0.018)	0.115 (0.139)
Licence requirement	-0.047 (0.033)	-0.003 (0.017)	-0.271 (0.207)
CCW permits	-0.034 (0.048)	-0.020 (0.022)	0.276 (0.258)
Open carry	-0.021 (0.030)	0.010 (0.011)	0.312 (0.289)
NFA restrictions	-0.004 (0.033)	0.017 (0.018)	0.346 (0.288)
Peaceable journey law	-0.017 (0.024)	-0.010 (0.012)	-0.404 (0.350)
Stand your ground	0.050** (0.022)	-0.004 (0.019)	-0.181*** (0.044)
Income (billion USD)		-0.023 (0.066)	0.688*** (0.238)
Population (million)		0.008*** (0.002)	-0.020 (0.022)
Year		0.006*** (0.001)	0.004*** (0.001)
State fixed effects	No	No	Yes
Observations	1683	1683	1683

The dependent variable is an indicator for an active shooter event. Coefficients in columns 1 and 2 represent marginal effects from probit regressions. Column 3 provides the coefficients from a linear probability model. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

include controls for population and personal income in column 2, the estimates on the *AR-Ban* and *Stand Your Ground* indicator variables are no longer significant. Further, the coefficient on *Assault Law* is only marginally significant. Again, none of the other seven indicator variables produces a significant coefficient. We note, however, that the estimates for *Population* and *Year* are positive and significant in column 2, reflecting the fact that incidents occur in states with higher populations and have increased over time.

Column 3 presents the results from a linear probability model where we include state fixed effects.<sup>12</sup> A few results are noteworthy. First, we find that the coefficient on *Stand Your Ground* becomes negative and significant at the 0.01 level while the coefficients on *AR-Ban* and *Assault Law* are negative significant at the 0.05 level. We also find that, when controlling for state fixed effects, *Income* and *Year* produce positive and significant coefficients while *Population* does not. Combined, the results in Table 3 show that any effect that gun laws have on the likelihood of an active shooter outcome depends on the econometric

specification. Further, many of the gun laws analysed in the table have no effect on the probability of an event. The only estimate that is consistently negative is the coefficient on state assault weapons laws. These results might contribute to policy debate about the effectiveness of gun laws on active shooter events.

### Gun laws and weapon choice

Next, we examine whether gun laws, including the Federal Assault Weapons Ban, affected the use of assault weapons during an active shooter event. Using the cross-sectional data, we estimate the following equation:

$$\begin{aligned}
 AR_{used_i} = & \gamma_0 + \gamma_1 AR - Ban_t + \gamma_2 Assault\ Law_t \\
 & + \gamma_3 Age_i + \gamma_4 Minority_i + \gamma_5 School_i \\
 & + \gamma_6 Workplace_i + \gamma_6 Culture\ of\ Honour \\
 & State_i + \gamma_7 Mental\ Illness_i + \gamma_8 LegalGun_i \\
 & + \gamma_9 Year_t + \theta_{j,i,t} \sum_{j=1}^8 GunLaw_{i,t} + \eta_i
 \end{aligned} \quad (2)$$

Here, the dependent variable is equal to unity if an assault weapon was used during an event and zero otherwise. The independent variables of interest are an indicator variable capturing the period when the Federal Assault Weapons Ban existed (September 1994 to September 2004) as well as an indicator variable capturing whether the state in which the event occurred had an assault weapons law. Other control variables include characteristics of the gunman and the venue, such as *Age*, *Year*, and indicator variables for *Minority*, *School*, *Workplace*, *Culture of Honour State*, *Mental Illness* and *Legal Gun*. We also include eight indicator variables that capture the remaining state gun laws.

Table 4 reports the results from estimating Equation (2) using probit regressions. We report the marginal effects from the probit estimates as well as robust standard errors. In column 1, we only include the indicator variables *AR-Ban* and *Assault Law*. The estimates are statistically insignificant, indicating that neither the federal assault weapon ban nor state assault weapon bans affect the probability that assault weapons are used in an active shooter event. In column 2, we include control

<sup>12</sup>We use a linear probability model instead of a probit given the biases and inconsistency found in fixed effects estimators for non-linear models (see Greene 2004).

**Table 4.** Determinants of the use of assault weapons.

	1	2	3	4
AR-Ban	-0.161 (0.162)	-0.157 (0.169)	-0.226 (0.181)	-0.233 (0.182)
Assault Law	0.192 (0.199)	0.201 (0.210)	0.167 (0.232)	0.218 (0.246)
Age		-0.001 (0.003)		-0.002 (0.003)
Minority		-0.082 (0.073)		-0.090 (0.074)
School		0.079 (0.114)		0.082 (0.119)
Workplace		0.018 (0.088)		0.010 (0.088)
Culture of Honour State		0.024 (0.074)		0.061 (0.090)
Mental Illness		0.072 (0.069)		0.045 (0.071)
Legal Gun		0.008 (0.103)		-0.005 (0.101)
Year		-0.006 (0.005)		-0.004 (0.005)
Purchase Permit			0.214* (0.124)	0.202 (0.138)
Gun register			0.003 (0.124)	-0.034 (0.135)
Licence requirement			-0.046 (0.158)	0.069 (0.194)
CCW permits			0.021 (0.111)	0.014 (0.116)
Open carry			-0.090 (0.117)	-0.041 (0.123)
NFA restrictions			-0.083 (0.121)	-0.099 (0.123)
Peaceable journey law			0.051 (0.098)	0.019 (0.097)
Stand your ground			0.162* (0.083)	0.191** (0.082)
Wald	0.98	6.19	9.91	14.95
p-Value	0.613	0.721	0.449	0.599
Observations	184	184	184	184

Coefficients represent marginal effects from probit regressions. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

variables for characteristics of the gunman and venue as well as the variable *Year*. Again, we do not find that either federal laws or state laws affect the use of assault weapons. We also note that none of the control variables are significantly different from zero. Column 3 includes additional indicator variables capturing the other eight common state gun laws. Again, we do not find that *AR-Ban* and *Assault Law* produce significant estimates. We do, however, find that *Purchase Permit* and *Stand Your Ground* produce positive and significant coefficients. Column 4 reports the results of the full model. When including the control variables that capture the characteristics of the gunman and venue, the estimate for *Purchase Permit* is no longer significant. However, the coefficient on *Stand Your Ground* remains positive and significant, suggesting that states with stand your ground laws were more likely to have an active shooter event where the shooter

used an assault weapon. Perhaps more importantly, neither *AR-Ban* nor *Assault Law* produce significant coefficients. Overall, the results in Table 4 support the idea that gun laws targeting the restriction of assault weapons do not impact whether these weapons are used during an active shooter event.

### Explaining the number of victims and fatalities: gun characteristics

In this section, we attempt to identify factors that influence the number of victims and the number of fatalities in an active shooter event. In particular, we examine the effect of the number and types of guns used on the number of victims and fatalities. We also include a variety of control variables that might provide some important inferences. We estimate the following equation using our cross-sectional sample of active shooter events:

$$\begin{aligned}
 \text{Victims/Fatalities}_i = & \beta_0 + \beta_1 \text{Legal Gun}_i \\
 & + \beta_2 D\_Hand\ guns_i \\
 & + \beta_3 D\_Revolvers_i \\
 & + \beta_4 D\_Shotguns_i + \beta_5 D\_Assault_i \\
 & + \beta_6 High\ Capacity\ Magazine_i \\
 & + \beta_7 Age_i + \beta_8 Minority_i \\
 & + \beta_9 School_i + \beta_{10} Workplace_i \\
 & + \beta_{11} Culture\ of\ Honour\ State_i \\
 & + \beta_{12} Mental\ Illness_i \\
 & + \beta_{13} Arrested_i + \beta_{14} Shot\ by \\
 & Police_i + \beta_{15} Year_i + \varepsilon_i
 \end{aligned} \tag{3}$$

The dependent variable is either the number of victims (*Victims*) or the number of fatalities (*Fatalities*) during an event. Independent variables of interest include *Legal Gun*, *D\_Handguns*, *D\_Revolver*, *D\_Shotguns*, *D\_Assault* and *High Capacity Magazine*. Additional control variables include *Age* and the indicator variables for *Minority*, *School*, *Workplace*, *Culture of Honour State* and *Mental Illness*. In addition to the demographic information about the gunman and the venue, we also control for the outcome of the event. *Arrested* is an indicator variable for whether the gunman was arrested. *Shot by Police* is an indicator variable for whether the gunman was shot by

police officers. The omitted dummy category consists of cases when the gunman committed suicide. As before, we also control for *Year*.

Since the dependent variables are discrete count variables, we use negative binomial regressions. While the Poisson regression also allows for consistent estimates using count data, the Poisson model makes more restrictive distributional assumptions than the negative binomial model by requiring means and variances to be equal. The summary statistics of both *Victims* and *Fatalities* in Table 2 show that the variances of both *Victims* and *Fatalities* are much larger than the means, suggesting that the dependent variables are over-dispersed. Therefore, we report the results from the negative binomial regressions along with robust standard errors in Table 5, although we note that qualitatively similar results are found when we use Poisson regressions to estimate Equation (3).

Column 1 shows the results from a simple regression where the dependent variable is *Victims* and the only independent variable is the indicator variable *Legal Gun*. We do not find that *Legal Gun* produces

an estimate that is significantly different from zero. In column 2, we include indicator variables for each of the gun types. We find that the estimates for each of the indicator variables produce positive estimates that are statistically different from zero. However, we cannot reject the null that the coefficients are equal to each other. This suggests that there is not one type of gun that causes more victims than another. In column 3, we estimate a simple regression where we only include the indicator variable *High Capacity Magazine* and find that the estimate is positive and statistically significant. In column 4, we find that *D\_Handguns* and *D\_Shotguns* retain their positive and significant estimates, but the coefficients on *D\_Revolvers* and *D\_Assault* do not. Moreover, the coefficient on *D\_Assault* is statistically lower than the coefficients on *D\_Handguns* and *D\_Shotguns* and the coefficient on *D\_Revolvers* is statistically lower than the coefficient on *D\_Shotguns*. We also note that *High Capacity Magazine* produces a positive and significant estimate, which is similar to the simple regression in column 3. A few other results are noteworthy. We find significantly negative

**Table 5.** Determining the number of victims and fatalities: effect of gun types.

	Dependent variable: victims				Dependent variable: fatalities			
	1	2	3	4	5	6	7	8
Legal Gun	-0.122 (0.222)			0.118 (0.143)	-0.242 (0.250)			0.011 (0.181)
D_Handguns		0.430** (0.173)		0.386*** (0.141)		0.431** (0.189)		0.437*** (0.168)
D_Revolvers		0.288** (0.138)		0.143 (0.125)		0.541*** (0.129)		0.330*** (0.119)
D_Shotguns		0.443*** (0.170)		0.620*** (0.132)		0.391** (0.181)		0.605*** (0.161)
D_Assault		0.373** (0.160)		-0.083 (0.152)		0.097 (0.172)		-0.234 (0.185)
High Capacity Magazine			0.591*** (0.154)	0.478*** (0.147)			0.403** (0.166)	0.388** (0.164)
Age				-0.009*** (0.003)				-0.004 (0.004)
Minority				-0.074 (0.114)				0.068 (0.142)
School				-0.393** (0.191)				-0.570*** (0.219)
Workplace				-0.517*** (0.134)				-0.719*** (0.136)
Culture of Honour State				0.072 (0.105)				-0.046 (0.137)
Mental Illness				0.339*** (0.113)				0.261** (0.131)
Arrested				-0.186 (0.119)				-0.598*** (0.137)
Shot by Police				-0.246* (0.136)				-0.441*** (0.171)
Year				-0.034*** (0.007)				-0.031*** (0.008)
Observations	184	184	184	184	184	184	184	184

Coefficients from negative binomial regressions. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

coefficients for *Age*, *School*, *Workplace*, *Shot by Police* and *Year* and a positive and significant coefficient on the indicator variable *Mental Illness*. This latter finding suggests that mentally ill gunman generally inflict injury upon a greater number of individuals. The negative coefficient on *Year* suggests that while the likelihood of events has increased over time the severity as measured by victims and fatalities has decreased.

To determine the economic magnitude of any of the estimated coefficients, we transform the negative binomial estimate into percentage differences using the expression  $100 \times \{\exp(\beta_j) - 1\}$ , where  $\beta_j$  is one of the  $j$  estimated coefficients from Equation (3). Focusing on column 4, the use of this expression for the estimated coefficient for, say, *D\_Handguns*, we find that when a handgun is used by a gunman, the number of victims increases approximately 47%. When shotguns or high-capacity magazines are used, the number of victims increases by 86% or 61%, respectively. Further, mentally ill gunmen generally have a 40% higher number of victims than non-mentally ill gunman.

The results in column 4 provide some important insights into the outcomes of active shooter events. First, we find that mental illness and high-capacity magazines are positively correlated with the number of victims during these types of incidents. Second, while handguns and shotguns also correlated with the number of victims, assault weapons are not. Third, younger shooters, at places other than schools or workplaces, generally have a higher number of victims. Lastly, we find that, in cases where the gunman is shot by police, the number of victims decreases by nearly 28%.

Columns 5–8 report the results when the number of fatalities is used as the dependent variable. Results in columns 5–7 are generally similar to those in the full model (column 8), so, for brevity, we only discuss the findings in column 8. We also find that the conclusions that we draw in column 4 are somewhat similar to those in column 8. For instance, *D\_Handguns*, *D\_Shotguns*, *High Capacity Magazines* and *Mental Illness* produce positive

estimates while *School*, *Workplace*, *Shot by Police* and *Year* produce negative coefficients. However, we also find a significantly positive estimate on *D\_Revolvers* and a significantly negative estimate on *Arrested*. Focusing on the magnitude of the coefficients in column 8 to the corresponding coefficients in column 4, the economic significance seems to be similar between columns.<sup>13,14</sup>

Next, we extend our analysis by examining the number of guns and gun types instead of looking only at the whether a particular type of gun was used in the mass shooting. To do so, we estimate a variant of Equation (3) as follows:

$$\begin{aligned} \text{Victims/Fatalities}_i = & \beta_0 + \beta_1 \# \text{Gun}_i \\ & + \beta_2 \# \text{Hand guns}_i \\ & + \beta_3 \# \text{Revolvers}_i \\ & + \beta_4 \# \text{Shotguns}_i + \beta_5 \# \text{Assault}_i \\ & + \beta_6 \text{Age}_i + \beta_7 \text{Minority}_i \\ & + \beta_8 \text{School}_i + \beta_9 \text{Workplace}_i \\ & + \beta_{10} \text{Culture of Honour State}_i \\ & + \beta_{11} \text{Mental Illness}_i \\ & + \beta_{12} \text{Arrested}_i + \beta_{13} \text{Shot by} \\ & \text{Police}_i + \beta_{14} \text{Year}_i + \varepsilon_i \end{aligned} \quad (4)$$

In Equation (4), the dependent and independent variables are the same as in Equation (3) with one exception. Instead of including indicator variables for gun types, in Equation (4) we include the total number of guns (*#Guns*), the number of handguns (*#Handguns*), the number of revolvers (*#Revolvers*), the number of shotguns (*#Shotguns*) and the number of assault weapons (*#Assault Guns*). The results are reported in Table 6. For brevity, we will discuss the results from the full models in columns 3 and 4 and columns 7 and 8. In column 3, we find that, after controlling for a variety of independent variables, the estimate for *#Guns* is significantly positive. In economic terms, a unit increase in the number of guns is associated with a 21.7% increase in the number of

<sup>13</sup>As a measure of robustness, we estimate Equation (3) using a different definition for assault weapons. Instead of the definition used for Assault Weapons according to FBI reports, we redefine Assault Weapons using a broader definition that has been used in a bill that was introduced 24 January 2013 that would impose various bans on assault weapons. Results from these tests again show that whether a gun that was used under this alternative definition is unrelated to the number of injured victims or the number of fatalities.

<sup>14</sup>As another measure of robustness, instead of including an indicator variable for the use of high-capacity magazines, we include the number of guns that were used with high-capacity magazines. These unreported tests also show a direct relation between the number of guns with high-capacity magazines and the number of injured victims as well as the number of fatalities. The results from these tests are available upon request from the authors.



**Table 6.** Determining the number of victims and fatalities: effect of the number of guns.

	Dependent variable: victims				Dependent variable: fatalities			
	1	2	3	4	5	6	7	8
#Guns	0.268*** (0.072)		0.196*** (0.058)		0.228*** (0.068)		0.178*** (0.057)	
#Handguns		0.300*** (0.095)		0.258*** (0.078)		0.288*** (0.109)		0.247** (0.097)
#Revolvers		0.051 (0.095)		-0.047 (0.066)		0.238 (0.169)		0.104 (0.067)
#Shotguns		0.331** (0.135)		0.362*** (0.114)		0.285* (0.152)		0.369*** (0.135)
#Assault Guns		0.323** (0.133)		0.189* (0.100)		0.081 (0.132)		-0.006 (0.127)
Age			-0.010*** (0.003)	-0.010*** (0.003)			-0.005 (0.005)	-0.005 (0.004)
Minority			-0.053 (0.128)	-0.000 (0.125)			0.128 (0.153)	0.161 (0.148)
School			-0.484** (0.201)	-0.514*** (0.194)			-0.645*** (0.217)	-0.668*** (0.207)
Workplace			-0.648*** (0.152)	-0.669*** (0.148)			-0.811*** (0.141)	-0.833*** (0.138)
Culture of Honour State			0.032 (0.110)	0.051 (0.107)			-0.076 (0.145)	-0.073 (0.139)
Mental Illness			0.326*** (0.120)	0.338*** (0.118)			0.251* (0.141)	0.273** (0.136)
Arrested			-0.165 (0.131)	-0.153 (0.124)			-0.581*** (0.145)	-0.585*** (0.140)
Shot by Police			-0.200 (0.139)	-0.216* (0.130)			-0.376** (0.178)	-0.389** (0.168)
Year			-0.026*** (0.007)	-0.029*** (0.007)			-0.025*** (0.007)	-0.026*** (0.007)
Observations	184	184	184	184	184	184	184	184

Coefficients from negative binomial regressions. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

victims. The other control variables produce coefficients that are similar in sign and magnitude to the corresponding coefficients in the previous table. In column 4, we find that the estimates for *#Handguns*, *#Shotguns* and *#Assault Guns* produce estimates that are positive and significant at the 0.10 level or lower. In economic terms, a unit increase in the number of handguns, shotguns and assault weapons is associated with a 29%, 44% and 21% increase, respectively, in the number of victims. In this case, we cannot say that assault guns have a statistically different impact on victims than the other types of guns.

Columns 5–8 report the results when the dependent variable is the number of fatalities. We report that while *#Handguns* and *#Shotguns* produce positive and significant estimates, *#Assault Guns* does not. In addition, the coefficient on *#Assault Guns* is statistically lower than the coefficients on *#Handguns* and *#Shotguns*. We still observe negative coefficients on the indicator variables for *School*, *Workplace*, *Arrested*, *Shot by Police* and *Year*. Further, the estimate for *Mental Illness* is positive and significant. Results in

this subsection have interesting and important implications. First, the use of assault weapons is not necessarily associated with more injuries or more deaths in our cross section of active shooter events. Instead, the use of handguns and shotguns is more highly correlated with the number of victims/fatalities. Second, mentally ill gunmen have a higher number of victims and fatalities than non-mentally ill gunmen. Third, law enforcement (in terms of arresting the gunmen or shooting the gunmen) is associated with a decrease in the number of victims/fatalities. The inferences from these tests are likely to contribute to the ongoing gun policy debate.<sup>15</sup>

### Explaining the number of victims and fatalities: mental health characteristics

In Table 2, we found that 46% of the individuals responsible for active shooter events in the United States showed possible signs of mental illness according to various reports. Further, our findings in Tables 5 and 6 seem to indicate that mental illness is associated

<sup>15</sup>As mentioned in footnote 6, we use an alternative definition for assault weapons according to a bill voted on by the U.S. senate on 24 January 2013. Using this alternative definition for assault weapons, we are able to draw similar conclusions to those drawn in Table 6.

with a higher number of victims/fatalities. Given these statistics, we provide a more thorough examination of the role that mental illness plays in explaining the total number of victims and the number of fatalities. We not only examine reports of possible signs of mental illness, but we also gather information about the types of medication the gunman was prescribed and whether or not the gunman was on or off the prescribed medication at the time of the mass shooting.

We estimate the following equation using our cross-sectional sample of active shooter events:

$$\begin{aligned} \text{Victims/Fatalities}_i = & \beta_0 + \beta_1 \text{MentalIll}_i \\ & + \beta_2 \text{Use DepMed}_i \\ & + \beta_3 \text{OffDepMed}_i \\ & + \beta_4 \text{Age}_i + \beta_5 \text{Minority}_i \\ & + \beta_6 \text{School}_i + \beta_7 \text{Workplace}_i \\ & + \beta_8 \text{Culture of Honour State}_i \\ & + \beta_8 \text{Arrested}_i + \beta_9 \text{PoliceShot}_i \\ & + \beta_{10} \text{Year}_i + \varepsilon_i \end{aligned} \quad (5)$$

As before, the dependent variables are either the number of victims or the number of fatalities. The independent variables are similar to those used in the previous section. We control for *Age*, *Year* and include the indicator variables for *Minority*, *School*, *Workplace*,

*Culture of Honour State*, *Arrested* and *Shot by Police*. The independent variables of interest in Equation (5) are the indicator variable, *Mental Illness*, for whether there were reported signs of mental illness in the gunman, the indicator variable *Use Depression Med*, for whether the gunman had reportedly been prescribed depression medication, and the indicator variable *Off Depression Med*, for whether the gunman had previously been prescribed depression medication, but was reported off the depression medication at the time of the incident.

Results from estimating Equation (5) using negative binomial regressions are reported in Table 7 along with robust standard errors. As before, in unreported tests we estimate Equation (5) using Poisson regressions and find results to be qualitatively similar to our negative binomial results. Columns 1–3 and 6–8 present the results from simple regressions where we include each independent variable of interest. Columns 5 and 10 report the results from estimating the full model for each dependent variable. Because we are able to draw inferences from the full models that are similar to those from the various simple regressions, we only discuss our findings in columns 5 and 10.

Column 5 shows that after controlling for a variety of other variables both *Mental Illness* and *Use Depression Med* produce estimates that are positive

**Table 7.** Determining the number of victims and fatalities: effect of mental status.

	Dependent variable: victims					Dependent variable: fatalities				
	1	2	3	4	5	6	7	8	9	10
Mental Illness	0.456*** (0.154)			0.396** (0.165)	0.312** (0.138)	0.325** (0.163)			0.236 (0.171)	0.192 (0.151)
Use Depression Med		0.518*** (0.156)		0.381** (0.165)	0.335** (0.162)		0.645*** (0.136)		0.513*** (0.152)	0.531*** (0.163)
Off Depression Med			−0.279 (0.242)	−0.230 (0.225)	0.101 (0.189)			−0.933*** (0.168)	−0.833*** (0.178)	−0.448** (0.180)
Age					−0.010*** (0.004)					−0.004 (0.005)
Minority					−0.137 (0.138)					0.032 (0.162)
School					−0.433* (0.231)					−0.514** (0.239)
Workplace					−0.622*** (0.165)					−0.693*** (0.141)
Culture of Honour State					0.041 (0.121)					−0.074 (0.156)
Arrested					−0.190 (0.136)					−0.603*** (0.151)
Shot by Police					−0.232* (0.138)					−0.386** (0.169)
Year					−0.031*** (0.008)					−0.031*** (0.007)
Observations	184	184	184	184	184	184	184	184	184	184

Coefficients from negative binomial regressions. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

and significantly differ from zero. These results suggest that differences in the mental health of the gunmen are directly associated with the number of victims in an active shooter event. This finding also states that despite the use of depression medication mental illness still has a direct effect on the number of victims.

Column 10 presents the coefficients when using the number of fatalities as the dependent variable. Here, we do not find that mental health of the gunman is correlated with the number of fatalities. However, we again find that the use of depression medication is associated with a higher number of fatalities. Interestingly, being off of depression medication is associated with a significantly lower number of fatalities. The coefficients for *School*, *Workplace*, *Arrested* and *Shot by Police* are again negative and significant at the 0.05 level, which is consistent with our findings in the previous tables. The results in this subsection have some important implications that might also add to the gun policy debate. While Table 2 shows that about 46% of gunmen had signs of mental illness, Tables 5 and 6 present some evidence that mental illness is indeed an important determinant of the number of victims/fatalities. In this last table, we observe that the use of depression medication is also associated with a high number of victims/fatalities. This could mean one of two things. First, the use of depression medication may simply signal that a particular gunman had severe mental health issues, which could explain the higher number of victims/fatalities. Second, our findings might suggest that depression medication is not an important deterrent in the severity of crimes committed by the mentally ill.<sup>16</sup>

#### IV. Conclusion

After recent active shooter events, policymakers have renewed the debate about how to prevent more of these incidents from occurring. A call for greater regulation has been made by the public as well as by politicians. However, little is known about the factors that impact whether an event occurs and the outcomes of such events. To inform policy, this study takes a comprehensive look at these types of

incidents in the United States during the last 31 years. Our analyses find that most gun laws are not correlated with whether an event occurs, with the exception of state assault weapons laws which show a consistent negative correlation. However, neither state nor federal assault weapons laws are significantly related to whether these types of weapons are used in active shooter events.

When taking a closer look at the incidents themselves, our multivariate results show that the use of assault weapons is not generally associated with an increase in the number of victims or the number of fatalities. On the other hand, the uses of high-capacity magazines, handguns and shotguns are all consistently associated with increases in both the number of victims and fatalities. Combined with earlier findings, these results suggest that policymakers might want to focus future policy on other areas besides the regulation of assault weapons.

Our tests also show that signs of mental illness in the gunman are positively correlated with the number of victims and fatalities. In particular, current use of depression medication is significantly correlated with an increase in the number of victims and fatalities. These results indicate that improvements in mental health may reduce the severity of active shooter events.

#### Disclosure statement

No potential conflict of interest was reported by the authors.

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<sup>16</sup>We also ran regressions where we interacted mental illness with our other variables such as age, minority status and venue. We did not find any significant interaction effects.

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# EXHIBIT 107

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CRIMINOLOGY  
& Public Policy

**SPECIAL ISSUE ARTICLE**

COUNTERING MASS VIOLENCE IN THE UNITED STATES

# Evidence concerning the regulation of firearms design, sale, and carrying on fatal mass shootings in the United States

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**Research Summary:** We used data from the FBI's Supplemental Homicide Reports and other publicly available databases to calculate state-level annual incidence of fatal mass shootings for 1984–2017. Negative binomial regression models were used to estimate the associations between changes in key gun laws and fatal mass shootings. Handgun purchaser licensing laws and bans of large-capacity magazines (LCMs) were associated with significant reductions in the incidence of fatal mass shootings. Other laws commonly advocated as solutions to mass shootings—comprehensive background checks, assault weapons bans, and de-regulation of civilian concealed carry of firearms—were unrelated to fatal mass shootings.

**Policy Implications:** Our findings suggest that laws requiring firearm purchasers to be licensed through a background check process supported by fingerprints and laws banning LCMs are the most effective gun policies for reducing fatal mass shootings.

**KEYWORDS**

mass shooting, gun regulation, EVALUATION

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High-profile public mass shootings (e.g., incidents that gain significant media attention as a result of high victim count and/or unique characteristic such as location or motive) prompt what have become predictable responses across the political spectrum. One side points to easy firearm access as the key cause of mass shootings and calls for stronger gun laws including comprehensive background checks, bans on assault weapons and large-capacity magazines (if those were used), and more recently, Extreme Risk Protection Order (ERPO) laws to disarm persons planning violent acts. The other side sees unarmed victims being shot in mass shootings and focuses on the hypothetical question, “What if one of the victims or a bystander used a firearm to stop the attack?” The solutions to mass shootings that stem from this perspective include eliminating so-called “gun free zones” and reducing or eliminating restrictions on civilian carrying of concealed firearms in public places.

In a study of fatal mass shootings in the United States during 2014–2017 with several online data sources, Zeoli and Paruk (2020, issue) determined that 46% of the shootings were committed by someone who was prohibited or likely prohibited from possessing a firearm. But the breadth of disqualifying conditions for firearm possession—e.g., whether convictions for violent misdemeanors, domestic violence restraining orders (DVROs) involving dating partners, and younger than 21 years of age disqualify someone from purchasing or possessing a firearm—vary significantly across states and determine the size of the pool of persons at increased risk for perpetrating firearm violence who are legally prohibited from purchasing or possessing firearms (Vittes, Vernick, & Webster, 2012). Indeed, the breadth of disqualifying conditions for persons with a history of violence was consistently associated with reductions in rates of intimate partner homicides (Zeoli et al., 2018). Because many mass shootings are committed in the context of domestic violence or involve perpetrators with a history of domestic violence (Zeoli & Paruk, 2020), broader firearm restrictions for DVROs and violent misdemeanors could potentially reduce mass shootings.

Broad firearm prohibitions for violent or other criminal actions may not keep those individuals from accessing firearms without strong background check systems. State laws requiring comprehensive background checks (CBCs) and purchaser licensing could also potentially influence firearm availability to individuals at risk of perpetrating a mass shooting by making it harder for prohibited persons to obtain firearms. The typical CBC law requires prospective purchasers in private transfers of firearms to pass a background check that is facilitated through a licensed firearm dealer. In contrast, most purchaser licensing laws require prospective purchasers to apply directly at public safety agencies where they are fingerprinted for thorough background checks that include more complete records of prohibiting incidents and greater time available to conduct those checks than is the case for background checks absent licensing. Some licensing laws also require gun safety training, and a few provide officials the ability to use their discretion to deny an applicant if there is good reason to believe he or she might be dangerous (e.g., some history of violence). Rigorous studies of the impact of state CBC laws have not shown that these laws reduce homicides (Castillo-Carniglia et al., 2018; Kagawa et al., 2018; Zeoli et al., 2018); however, there has been consistent evidence that licensing laws reduce homicides (Crifasi et al., 2018; Hasegawa, Webster, & Small, 2019; Rudolph, Stuart, Vernick, & Webster, 2015) and suicides (Crifasi, Meyers, Vernick, & Webster, 2015). Licensing laws could potentially suppress fatal mass shootings, but there are no rigorous studies examining this question.

The research literature on the effects of firearm policies on mass shootings is sparse and has important limitations. A recent study found that that higher rates of gun ownership and greater permissiveness of gun laws were associated with higher rates of fatal mass shootings for incidents connected to domestic violence and other types of mass shootings (Reeping et al., 2019). Unfortunately, the gun law permissiveness scale used in the study has not been fully described, evaluated, or validated, and it does not allow for estimates of the effects of specific firearm laws on mass shootings.<sup>1</sup> Furthermore, the data to identify fatal mass shootings in this study—the FBI’s Supplemental Homicide Reports (SHR)—did

not include major fatal mass shootings, including shootings at Sandy Hook Elementary School in Newtown, Connecticut, in 2012 (26 deaths); a movie theatre in Aurora, Colorado, in 2012 (12 deaths and 58 individuals with nonfatal gunshot wounds); or a church in Southerland Springs, Texas (26 deaths and 20 nonfatally wounded). The data for this study also counted the Virginia Tech mass shooting (32 deaths and 23 victims with nonfatal wounds) as three incidents as a result of the way that the SHR limits the number of victims to 11 in any given homicide incident. Another recent state-level study used an open-source database compiled by the publication *Mother Jones* and found no association between measures of gun ownership and gun law permissiveness and fatal mass shootings in public places (Lin, Fei, Barzman, & Hossain, 2018). The generally undescribed gun law permissiveness measure, however, seemed to be limited to concealed carry restrictions, and the *Mother Jones* database has been criticized for inconsistent application of inclusion/exclusion criteria and for missing some cases (Fox & Fridel, 2016).

Luca and colleagues estimated the effects of several state gun laws—CBC laws that extend background check requirements to private transfers, purchaser licensing laws, regulations over civilians carrying concealed weapons, bans of assault weapons or large-capacity magazines (LCMs)—and the probability that a four-fatality mass shooting occurred in a given state and year during 1989–2014 (Luca, Malhotra, & Poliquin, 2019). Unfortunately, the authors used linear regression models that violated model assumptions for binary outcomes and thus made the findings difficult to interpret.

Two recent studies, each using different data sources and different outcome measures for fatal mass shootings, drew different conclusions regarding the association between the federal ban of assault weapons and LCMs. Fox and Fridel (2016) used the SHR data to examine cases involving four or more firearm homicide victims and found no association between the incidence of fatal mass shootings and the presence of the federal ban of assault weapons and LCMs. It is curious that these researchers did not examine whether the ban influenced the number of persons shot in mass shootings because the characteristics of the banned products are relevant to how many shots can be fired in a short span of time. Indeed, recent studies have documented that fatal mass shootings committed with assault weapons and/or LCMs result in significantly more victims shot than is the case in such shootings which involved no assault weapons or LCMs (Klarevas, 2016; Koper, 2020, this issue; Koper, Johnson, Nichols, Ayers, & Mullins, 2018). DiMaggio and colleagues (2019) published a study in which they reported that during the period when the federal ban of assault weapons and LCMs was in place (1994–2004), fatal mass shootings were 70% less likely to occur. But this study had major limitations based on the data used and the lack of statistical controls for other law changes or social trends that might explain variation in mass shootings. The study used data on fatal public mass shootings with four or more fatalities for the years 1981 through 2017 that were collected by three open-source databases—*Mother Jones*, *Los Angeles Times*, and Stanford University. Inexplicably, the researchers only included cases in their analyses that appeared in all three sources and thereby excluded many incidents of fatal mass shootings. This limited their data to only 51 public mass shootings that presumably were the most widely publicized. The study did not examine variation by state and thus did not consider state gun laws nor did it control for other covariates other than linear trend. Gius (2015) estimated the effects of federal and state bans of assault weapons and LCMs with annual data from the SHR for the years 1982–2011 and found evidence that such bans were linked to lower rates of fatalities in mass shootings. Klarevas, Conner, and Hemenway (2019) found that LCM bans were associated with significantly fewer incidents of high-fatality (six or more victims) mass shootings and lower fatality rates for such shootings during the period 1990–2017. An important limitation of this study was that it did not consider the effects of any other type of firearm laws.

In-depth studies of the circumstances surrounding public mass shootings in the United States during 2000–2017 have found that armed civilians with concealed carry permits played a role in stopping mass



shootings while they are in progress in 5% of the incidents (ALERT & FBI, 2018; Blair & Schweit, 2014). The presence of armed civilians could also potentially deter some attacks in public places. Conversely, because some mass shootings result from spontaneous responses to conflict, having more people with immediate access to a firearm could spur more mass shootings. The Violence Policy Center (2019) identified 33 incidents between May 2007 and January 2019 in which someone with a permit to carry a concealed firearm shot and killed three or more people in an incident. Prior studies designed to estimate the impact of reducing legal restrictions on civilian concealed gun carrying in public places have been plagued by methodological limitations and have found inconsistent relationships between the adoption of such laws and homicides (Crifasi et al., 2018; Donohue, Aneja, & Weber, 2019; Morral, 2017). As a result, there is great uncertainty about the impact of laws that reduce barriers to civilian gun carrying on fatal mass shootings.

## 1 | METHOD

### 1.1 | Data

This research relied on data obtained from the FBI's SHR, which includes information on the number of victims, the demographics of the offender(s) and victim(s), the weapon(s) used, some circumstances or perpetrator motives, and the relationship between the offender and the first victim. We limited our data set to incidents of homicide that occurred between 1984 and 2017, involved four or more victims (excluding any offender death), and involved a firearm of any type. We excluded any case that was coded as having a connection to gang or narcotic activity because one of our supplemental data sets excludes gang- or narcotic-related events. Other studies that have examined mass shooting frequency have excluded gang and narcotic incidents, so we excluded these incidents to adhere to the current literature (Klarevas, 2016; Lankford, 2016). We also created a variable that indicated whether a shooting involved a domestic relationship because some laws restrict firearm access based on history of domestic violence. We defined domestic relationships broadly, including any offender–victim family relationship, boyfriend/girlfriend, or ex-spouse. Importantly, the offender–victim relationship data in SHR is based on the relationship between the offender and the first victim recorded in the homicide report.

Because SHR data rely on voluntary law enforcement reporting, some homicide data is missing. In particular, exploratory analysis revealed that the SHR did not include several high-profile, high-casualty mass shootings including the 2012 Newtown, CT, school shooting; the 2012 Aurora, CO, movie theater shooting; and the 2017 Sutherland Springs, TX, church shooting. To remedy these and other omissions, we compared the SHR data with data on mass shootings collected by Stanford University (*Stanford Mass Shootings in America, courtesy of the Stanford Geospatial Center and Stanford Libraries*, n.d.) for the years 1984–2017 and the Gun Violence Archive for the years 2014–2017 (*Mass Shootings in 2017*, n.d.) and added any missing incidents to our data set.<sup>2</sup> We followed Zeoli et al. (2018) in excluding Florida, Kansas, Kentucky, Nebraska, and Montana from our analysis because of systemic Uniform Crime Reports (UCR)–SHR reporting issues over multiple years.

Data on gun laws were collected and coded using traditional legal research methods. We included several state-level statutes: concealed carry laws, handgun purchaser licensing laws that require either in-person application or fingerprinting, laws requiring point-of-sale background checks only, firearm prohibitions for subjects of domestic violence restraining orders that include ex parte orders, firearm prohibitions for subjects of domestic violence restraining orders that include dating partners in the

definition of domestic violence, firearm prohibitions for subjects of domestic violence restraining orders that do not include ex parte orders or dating partners, laws requiring surrender of all firearms by subjects of domestic violence restraining orders, firearm prohibitions for violent misdemeanants, assault weapon bans, and large-capacity magazine bans. Some of the legal data was obtained from prior work (Zeoli et al., 2018). We obtained any missing legal data from the Thomson Reuters Westlaw database. Using Westlaw, Hein Online, and Lexis Nexis, we tracked each state's statutory history to determine when each law was enacted. Each collected law was compared with existing publicly available databases of state gun laws (Everytown; Giffords; *State Firearm Laws*). Any conflicts between our data set and the databases was resolved by reevaluating the statutory or legislative text. Specific laws and the states and time periods in which they were in effect are presented in Table 1. For our analysis, we coded the laws using a binary 0–1 variable that was only equal to 1 in a year in which a given state law was in effect for at least half of the year.

Our demographic control variables included a commonly used proxy measurement of gun ownership (proportion of all suicides where the chosen method was a firearm), state unemployment rate, poverty rate, percent population identified as male, percent population identified as Black, percent married, percent divorced, percent military veteran, percent living in an Metropolitan Statistical Area, ethanol consumption per capita, religious adherence, percent with a high school diploma, the drug overdose rate (estimated by the rate of nonsuicide overdose deaths), and the proportion of the population aged 15–24 years. These variables were gathered from the U.S. Census Bureau (Census), the Centers for Disease Control and Prevention (CDC), the Bureau of Labor Statistics (BLS), the Religion and Congregation Membership Survey (ARDA), and the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2017). Missing years of demographic data were interpolated. These control variables were selected based on prior research on firearm homicide and suicide (Crifasi et al., 2015; Rudolph et al., 2015; Zeoli et al., 2018).

## 1.2 | Analysis

We used generalized linear models with a negative binomial distribution to conduct pooled time-series analyses of three dependent variables measured at the state-year level: domestic-linked mass shootings, non-domestic-linked mass shootings, and all mass shootings. All three are overdispersed count variables. In addition to analyzing incidents of fatal mass shootings, we also analyzed the number of victim fatalities in fatal mass shootings as an outcome variable. The models included state fixed effects, the law variables, and the sociodemographic covariates as well as linear and quadratic trend terms to control for unmeasured conditions that may have influenced fatal mass shootings during the study period. In addition to the full models with all covariates, we examined parsimonious models that limited the sociodemographic control variables with coefficients in the full model that had  $p$  values less than .10. All models used a negative binomial distribution with robust standard errors accounting for clustering by state and with overall state population as the exposure variable.

We also performed several sensitivity analyses. To provide a more flexible control for unmeasured national trends, we substituted year fixed effects for the linear and quadratic trend terms in our models. Prior work has suggested that LCM and assault weapon bans might phase in gradually because of pre-ban spikes in purchasing and production (Koper, Woods, & Roth, 2004). To examine this, we ran our models with state LCM bans and state and federal assault weapon bans coded to phase in gradually, starting with .2 in year 1 and increasing .2 per year until hitting 1 in year 5. To evaluate whether specific, high-profile mass shooting incidents might be leading to policy adoption, we ran our models without specific observations for the years just prior to policy implementation.

TABLE 1

Private Transfer Laws				Prohibitions Related to Domestic Violence Restraining Orders (DVROs)			
State	Assault Weapon Ban	Large-Capacity Magazine Ban	Purchaser licensing with in-person or fingerprinting	Point-of-sale background check only	Final DVRO		
					only	parte orders	Includes dating partners
Alabama					9/1/15		
Alaska						7/1/96	7/1/96
Arizona					7/20/96–7/21/97	7/21/97	9/30/09
Arkansas							
California	12/31/91	1/1/00		1/1/91		1/1/95	1/1/91
Colorado		7/1/13		7/1/13	7/1/13		2/26/94– 11/30/98
Connecticut	7/1/94	4/4/13	10/1/95		10/1/94–10/1/99	10/1/16	10/1/99
Delaware				7/1/13		1/16/94	9/18/07
Georgia							
Hawaii			pre-1984		6/10/93–7/1/94	7/1/94	6/7/00
Idaho							
Illinois						1/1/10	1/1/96
Indiana				pre-1984– 11/30/98			7/1/02
Iowa			pre-1984		7/1/10		7/1/10
Louisiana							8/1/14
Maine					9/19/97–9/13/03	9/13/03	9/13/03
Maryland	10/1/13	8/1/94	10/1/13	10/1/96–10/1/13	10/1/96–10/1/09	10/1/09	10/1/15
Massachusetts	10/21/98	10/21/98	pre-1984			7/1/94	7/1/94
Michigan			pre-1984– 12/18/12				4/1/96
Minnesota							8/1/14

(Continues)

(Continued)

Private Transfer Laws					Prohibitions Related to Domestic Violence Restraining Orders (DVROs)			
State	Assault Weapon Ban	Large-Capacity Magazine Ban	Purchaser licensing with in-person or fingerprinting	Point-of-sale background check only	Final DVRO only	Includes ex parte orders	Includes dating partners	Includes surrender provision
Mississippi								
Missouri			pre-1984– 8/28/07					
Nevada				1/1/17			10/1/07	10/1/07
New Hampshire								
New Jersey	5/1/90	5/1/90	pre-1984			1/1/00	1/1/00	1/1/00
New Mexico						11/11/91	8/11/94	8/11/94
New York	11/1/00	11/1/00	pre-1984			11/1/96	7/21/08	11/1/96
North Carolina					12/1/95–12/1/97	12/1/03	12/1/97	12/1/03
North Dakota								
Ohio								
Oklahoma								
Oregon				8/9/15	1/1/16			
Pennsylvania				10/11/95		5/9/06	12/5/94	12/5/94
Rhode Island				pre-1984		7/1/17	7/1/05	7/1/05
South Carolina					6/4/15			
South Dakota								
Tennessee				5/10/94–11/1/98	7/1/09			7/1/09
Texas						1/1/08	9/1/01	
Utah						7/1/95		
Vermont							2/2/01	
Virginia						7/1/94		

(Continues)

TABLE 1 (Continued)

State	Private Transfer Laws				Prohibitions Related to Domestic Violence Restraining Orders (DVROs)			
	Assault Weapon Ban	Large-Capacity Magazine Ban	Purchaser licensing with in-person or fingerprinting	Point-of-sale background check only	Final DVRO only	Includes ex parte orders	Includes dating partners	Includes surrender provision
Washington				12/4/14		7/1/94	7/23/95	7/1/94
West Virginia						4/14/01	6/2/98	
Wisconsin					4/1/96–7/30/02		7/30/02	4/1/96
Wyoming								
Concealed Carry Permitting Laws								
State	No issue	May issue	Shall issue with discretion	Strict shall issue	Permitless carry	Violent Misdemeanor Prohibition		
Alabama		pre-1984–8/1/13	8/1/13					
Alaska	pre-1984– 10/1/94			10/1/94–9/9/03	9/9/03			9/1/15
Arizona	pre-1984– 7/16/94			7/16/94–7/28/10	7/28/10			
Arkansas	pre-1984– 7/27/94		7/27/94					
California		pre-1984				1/1/91		
Colorado		pre-1984– 5/17/03	5/17/03					
Connecticut		pre-1984						10/1/94
Delaware		pre-1984						
Georgia		pre-1984– 8/25/89	8/25/89					
Hawaii		pre-1984						6/13/88
Idaho		pre-1984–7/1/90		7/1/90–7/1/16	7/1/16			
Illinois	pre-1984–1/5/14		1/5/14					1/1/96

(Continues)

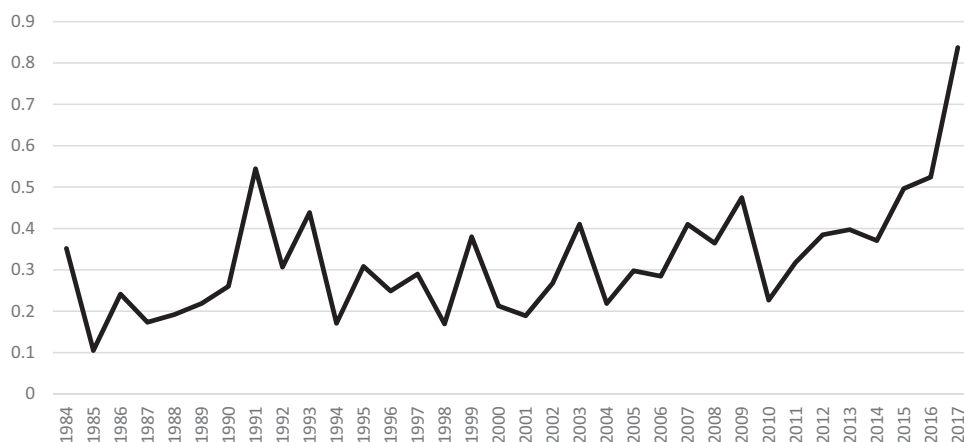
TABLE 1 (Continued)

State	Concealed Carry Permitting Laws				Violent Misdemeanor Prohibition
	No issue	May issue	Shall issue with discretion	Strict shall issue	Permitless carry
Indiana			pre-1984		
Iowa		pre-1984–1/1/11	1/1/11	4/19/96	
Louisiana	pre-1984– 4/19/96				
Maine				pre-1984– 10/15/15	10/15/15
Maryland		pre-1984			10/1/96
Massachusetts		pre-1984			
Michigan		pre-1984–7/1/01		7/1/01	
Minnesota		pre-1984– 5/28/03	5/28/03		8/1/03
Mississippi	pre-1984–7/1/91			7/1/91–4/15/16	4/15/16
Missouri	pre-1984– 2/26/04		2/26/04–1/1/17		1/1/17
Nevada		pre-1984– 10/1/95		10/1/95	
New Hampshire			pre-1984– 2/22/17		2/22/17
New Jersey		pre-1984			
New Mexico	pre-1984–1/1/04			1/1/04	
New York		pre-1984			pre-1984
North Carolina	pre-1984– 12/1/95			12/1/95	

(Continues)

T A B L E 1 (Continued)

State	Concealed Carry Permitting Laws				Violent Misdemeanor Prohibition
	No issue	May issue	Shall issue with discretion	Strict shall issue	Permitless carry
North Dakota	pre-1984–8/1/85			8/1/85–8/1/17	8/1/17
Ohio	pre-1984–4/8/04			4/8/04	
Oklahoma	pre-1984–9/1/95			9/1/95	
Oregon		pre-1984–1/1/90	1/1/90		
Pennsylvania		pre-1984– 6/17/89	6/17/89		
Rhode Island			pre-1984		
South Carolina		pre-1984– 8/23/96		8/23/96	
South Dakota		pre-1984–7/1/85		7/1/85	
Tennessee	pre-1984– 11/1/89	11/1/89–10/1/96		10/1/96	
Texas	pre-1984–1/1/96			1/1/96	
Utah		pre-1984–5/1/95	5/1/95		
Vermont					7/1/15
Virginia		pre-1984–7/1/95	7/1/95		
Washington				pre-1984	
West Virginia		pre-1984–7/7/89		7/7/89–5/24/16	5/24/16
Wisconsin	pre-1984– 11/1/11			11/1/11	
Wyoming		pre-1984– 10/1/94	10/1/94–7/1/11		7/1/11



**FIGURE 1** Victims in fatal mass shootings per 1 million population per year, 1984–2017

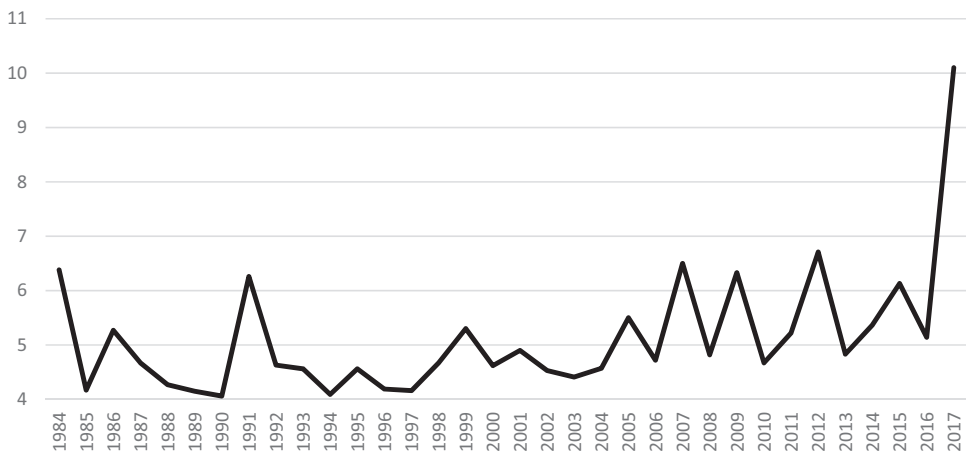
We also examined whether our findings changed when the cutoff for defining a fatal mass shooting was five or more victims and six or more victims. All models were estimated in Stata/IC 15.1 (StataCorp).

## 2 | RESULTS

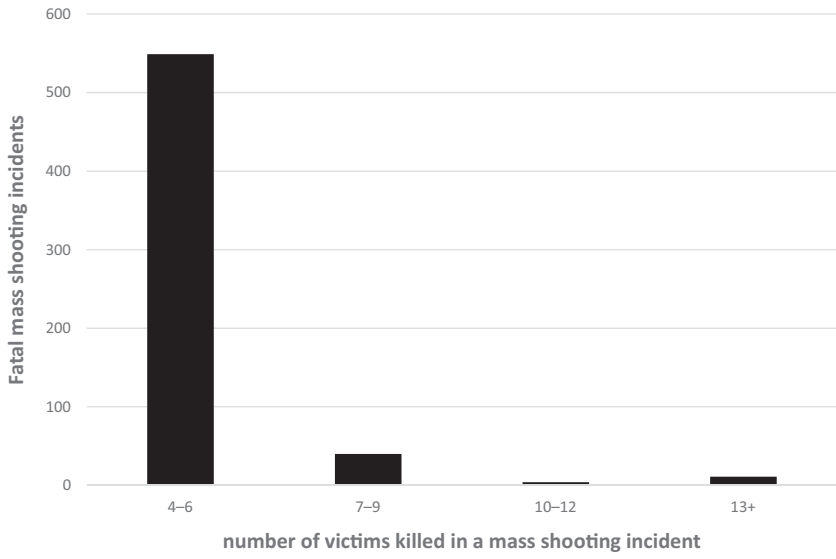
We identified 604 mass shooting incidents involving four or more murdered victims that met our inclusion criteria (no gang- or drug-related shootings) during the 1984–2017 study period. There were 2,976 victims murdered in these incidents, 842 (28.3%) in domestic-related shootings, 2,057 (69.1%) victims in non-domestic-related shootings, and 77 victims in all shootings in which it was unclear whether the shooting was domestic related. The annual rate of mass shooting fatalities per 1 million population nationwide was .36 per 100,000 population and ranged from 0 in Delaware and Rhode Island to .88 in South Carolina (see Table A1 in the Appendix). This rate was stable through most of the study period, drifted upward during 2007–2014, before accelerating between 2014 and 2017 (Figure 1). The mean number of victim fatalities by gunfire per incident during the study period was 4.93; victim fatalities were somewhat higher during the years after the federal ban of assault weapons and LCMs expired compared with the decade during which the ban was in place (5.85 during 2005–2017 vs. 4.59 during 1995–2004; Figure 2). Most shootings had four to six victims (Figure 3). A list of descriptive statistics for independent variables can be found in Table 2.

The estimates from the full negative binomial models (Table 3) indicate that handgun purchaser licensing laws requiring in-person application with law enforcement or fingerprinting were associated with incidents of fatal mass shootings 56% lower than that of other states (internal rate of return [IRR] = 0.44, 95% confidence interval [CI] 0.26, 0.73). For LCM bans, the IRR estimate (0.52, 95% CI = 0.27, 0.98) indicates a 48% lower risk of fatal mass shootings associated with the policy. We found no evidence that concealed carry laws, assault weapons bans, prohibitions for domestic abusers and violent misdemeanants, or point-of-sale CBC laws were associated with the incidence of fatal mass shootings. In models in which the number of mass shooting victim fatalities was the outcome, handgun purchaser licensing was protective (IRR = 0.44, 95% CI 0.24, 0.82) and the point estimate for LCM bans suggests a large protective effect albeit with a wide confidence interval (IRR = 0.30, 95% CI .08, 1.10) that make inferences less certain.





**FIGURE 2** Mean number of victims murdered per incident in shootings involving 4+ victim fatalities, 1984–2017



**FIGURE 3** Number of incidents of fatal mass shootings by the number of victims killed, united states, 1984–2017

Models for the incidence of mass shootings with domestic or intimate partner violence links revealed no significant associations with laws prohibiting firearms for domestic violence abusers or violent misdemeanants, or purchaser licensing laws (Table 4). LCM bans, however, were associated with a 61% lower rate of domestic mass shootings (IRR = 0.39, 95% CI 0.21, 0.73). The association for LCM bans was somewhat stronger in models for the number of victim fatalities in mass shootings (IRR = 0.25, 95% CI 0.11, 0.59). CBC laws were associated with large increases in domestic mass shooting victim counts (IRR = 2.23, 95% CI 1.10, 4.51).

Purchaser licensing laws were associated with a 62% lower incidence of non-domestic-linked fatal mass shootings (IRR = 0.38, 95% CI 0.20, 0.70) in the full model (Table 5). If the proxy for gun ownership is left out of the model, the IRR is similar (IRR = 0.39, 95% CI 0.22, 0.67). LCM bans were

**TABLE 2** Descriptive statistics for independent variables used in the analyses

Variable	Mean	Min	Max	SD
Concealed carry permits—May issue as reference	.14	0	1	.35
No issue				
Shall issue with discretion	.21	0	1	.41
Strict shall issue	.28	0	1	.45
Permitless	.05	0	1	.21
Purchaser licensing with discretion	.07	0	1	.25
Purchaser licensing in-person application/fingerprint required	.17	0	1	.37
Comprehensive background check—point of sale	.09	0	1	.28
DVRO firearm prohibition w/ final order, no dating partners	.04	0	1	.20
DVRO firearm prohibition includes ex parte	.22	0	1	.41
DVRO firearm prohibition includes dating partners	.27	0	1	.44
DVRO firearm prohibition surrender provision	.28	0	1	.45
Violent misdemeanor	.13	0	1	.34
Federal assault weapon ban	.29	0	1	.46
State assault weapon ban	.08	0	1	.26
Large-capacity magazine ban	.08	0	1	.27
Gun ownership (firearm suicides/all suicides)	.56	.13	.87	.14
Unemployment (%)	5.76	2.3	14.8	1.91
Percent in poverty	12.84	2.9	27.2	3.79
Percent male	49.16	47.63	52.71	.87
Percent Black	10.91	.28	38.29	9.77
Percent married	54.81	42.26	67.64	4.93
Percent divorced	10.31	4.78	16.54	2.03
Percent veteran	13.10	4.00	21.88	3.87
Percent living in MSA	70.09	14.94	100	19.94
Ethanol consumption per capita	2.40	1.23	5.10	.54
Religious adherence (%)	50.62	22.43	83.97	11.57
Percent Completed high school	83.30	62.59	92.8	5.87
Drug overdose rate	7.30	.14	55.26	6.55
Log proportion aged 15–24	−1.93	−2.15	−1.61	.09

Note. DVRO = domestic violence restraining order; MSA = Metropolitan Statistical Area; SD = standard deviation. Models also include state fixed effects, linear and quadratic time trend terms.

\* $p = .05$ .

linked with a lower incidence of non-domestic-linked fatal mass shootings in the parsimonious model (IRR = .34, 95% CI .14, .81); however, the IRR estimate for LCM bans of .65 and was not statistically significant in the full model. None of the other firearm laws were associated with the incidence of non-domestic-linked fatal mass shootings.

## 2.1 | Sensitivity Analyses

The models that assumed gradual effects for bans of assault weapons and large capacity magazines produced somewhat different results (Tables A2–A4). The negative association between LCM bans

**TABLE 3** Estimates for incident rate ratio for the incidence of fatal mass shootings

Variable	Incidents ( <i>n</i> = 604)		Victim Deaths ( <i>n</i> = 2,976)	
	IRR	95% CI	IRR	95% CI
Concealed carry permits—May issue as reference No issue	.93	[.55, 1.58]	1.53	[.82, 2.85]
Shall issue with discretion	.91	[.51, 1.60]	1.14	[.60, 2.19]
Strict shall issue	1.28	[.72, 2.27]	1.44	[.70, 2.94]
Permitless	1.29	[.50, 3.29]	1.02	[.32, 3.28]
Purchaser licensing in-person application/fingerprint required	<b>.44*</b>	[.26, .73]	<b>.43*</b>	[.26, .73]
Comprehensive background check—point of sale	1.10	[.77, 1.58]	1.43	[.74, 2.77]
DVRO firearm prohibition w/ final order, no dating partners	.86	[.42, 1.77]	.72	[.33, 1.59]
DVRO firearm prohibition includes ex parte	1.10	[.76, 1.58]	1.13	[.71, 1.77]
DVRO firearm prohibition includes dating partners	.89	[.56, 1.42]	.91	[.50, 1.65]
DVRO firearm prohibition surrender provision	.76	[.50, 1.16]	.75	[.44, 1.27]
Violent misdemeanor	1.51	[.79, 2.89]	1.25	[.63, 2.46]
Federal assault weapon ban	.92	[.67, 1.26]	.96	[.63, 1.46]
State assault weapon ban	.71	[.34, 1.48]	1.11	[.30, 4.16]
Large-capacity magazine ban	<b>.52*</b>	[.27, .98]	.30	[.08, 1.10]
Gun ownership	.15	[.00, 4.76]	.96	[.93, 1.00]
Unemployment	1.03	[.95, 1.10]	1.02	[.92, 1.13]
Percent in poverty	1.01	[.95, 1.07]	1.00	[.93, 1.07]
Percent male	.80	[.37, 1.70]	.84	[.36, 1.94]
Percent Black	1.07	[.91, 1.26]	1.18	[.96, 1.45]
Percent married	1.03	[.94, 1.13]	1.00	[.89, 1.11]
Percent divorced	1.03	[.80, 1.32]	.99	[.74, 1.32]
Percent veteran	<b>.86*</b>	[.75, .99]	.92	[.78, 1.09]
Percent living in MSA	1.00	[.98, 1.03]	1.00	[.97, 1.02]
Ethanol consumption per capita	1.10	[.40, 3.03]	.80	[.24, 2.69]
Religious adherence	1.01	[.97, 1.06]	.99	[.93, 1.04]
Percent completed high school	1.05	[.98, 1.13]	1.06	[.97, 1.16]
Drug overdose rate	1.01	[.97, 1.05]	.99	[.95, 1.03]
Log proportion aged 15–24	<b>.06*</b>	[.00, .99]	.99	[.95, 1.03]

*Note.* CI = confidence interval; DVRO = domestic violence restraining order; IRR = incident rate ratio; MSA = Metropolitan Statistical Area; SD = standard deviation. Models also include state fixed effects, linear and quadratic time trend terms.

\**p* = .05.

and total fatal mass shootings (IRR = 0.74, 95% CI 0.42, 1.31) and the number of victims killed in mass shootings (IRR = 0.38, 95% CI 0.10, 1.44) was no longer statistically significant in the full model, but it was associated with lower incidence in the parsimonious model for all fatal mass shootings (IRR = 0.54, 95% CI 0.29, 1.00). For domestic-linked mass shootings, LCM bans were associated with lower incidence in the parsimonious model for (IRR = 0.58, 95% CI 0.36, 0.94) and with fewer victim fatalities in the full model (IRR = 0.31, 95% CI 0.11, 0.86). Purchaser licensing laws were associated with lower incidence of total fatal mass shootings (IRR = 0.46, 95% CI 0.27, 0.77) and lower incidence rates for non-domestic-linked fatal mass shootings (IRR = 0.42, 95% CI 0.22, 0.77).

TABLE 4 Estimates for incident rate ratio for domestic-linked mass shootings

Variable	Incidents ( <i>n</i> = 182)		Victim Deaths ( <i>n</i> = 842)	
	IRR	95% CI	IRR	95% CI
Concealed Carry Permit—May issue reference	.66	[.26, 1.68]	.74	[.27, 2.08]
No issue				
Shall issue w/discretion	.98	[.41, 2.34]	.81	[.33, 2.00]
Strict shall issue	.90	[.33, 2.46]	.78	[.25, 2.48]
Permitless	2.33	[.35, 15.70]	1.43	[.16, 13.21]
Purchaser licensing in-person application or fingerprint required	.93	[.39, 2.19]	1.43	[.60, 3.39]
Comprehensive background checks—point of sale	1.88	[.92, 3.85]	<b>2.22*</b>	[1.10, 4.50]
DVRO prohibition—final orders, dating partner excluded	.89	[.31, 2.56]	.69	[.22, 2.13]
DVRO prohibition ex parte included	1.51	[.84, 2.71]	1.42	[.74, 2.74]
DVRO includes dating partners	.91	[.57, 1.43]	.80	[.50, 1.30]
DVRO surrender required	.85	[.45, 1.64]	.82	[.40, 1.67]
Violent misdemeanor prohibition	1.86	[.45, 7.69]	2.08	[.57, 7.60]
Federal assault weapons/LCM ban	.87	[.50, 1.51]	.84	[.46, 1.55]
State assault weapons ban	.40	[.14, 1.19]	.42	[.13, 1.32]
Large-capacity magazine ban	<b>.39*</b>	[.21, .73]	<b>.25*</b>	[.11, .59]
Gun ownership	.06	[.00, 8.9]	.96	[.89, 1.04]
Unemployment	1.05	[.91, 1.21]	1.09	[.92, 1.29]
Percent in poverty	1.01	[.89, 1.15]	1.00	[.87, 1.14]
Percent male	1.02	[.28, 3.68]	1.08	[.23, 5.03]
Percent Black	1.00	[.81, 1.24]	1.03	[.81, 1.30]
Percent married	.96	[.82, 1.13]	.97	[.82, 1.16]
Percent divorced	.90	[.61, 1.32]	.91	[.58, 1.43]
Percent veteran	1.00	[.83, 1.22]	1.08	[.89, 1.31]
Percent living in MSA	1.00	[.95, 1.05]	.98	[.93, 1.03]
Ethanol consumption per capita	.91	[.14, 6.00]	.79	[.11, 5.78]
Religious adherence	1.02	[.94, 1.10]	1.00	[.92, 1.08]
Percent completed high school	1.02	[.91, 1.14]	.99	[.88, 1.12]
Drug overdose rate	.98	[.92, 1.04]	.97	[.91, 1.04]
Log proportion aged 15–24	1.26	[.02, 95.3]	1.02	[.78, 1.34]

Note. CI = confidence interval; DVRO = domestic violence restraining order; IRR = incident rate ratio; MSA = Metropolitan Statistical Area; SD = standard deviation. Models also include state fixed effects, linear and quadratic time trend terms.

\**p* = .05.

When we used year fixed effects to account for unmeasured national trends in mass shootings, our point estimates for the gun law variables were similar to those in our primary models with linear and quadratic trend terms; however, the confidence intervals for the estimates expanded and the association between LCM bans and the incidence (.56, 95% CI .27, 1.16) and fatalities for all mass shootings (IRR = .37, 95% CI .11, 1.31) were no longer statistically significant at the .05 level (Table A5). Negative associations for LCM bans and the incidence and number of fatalities for domestic-linked mass shootings and negative associations between purchaser licensing and non-domestic-linked mass

**TABLE 5** Estimates for models for mass shooting incidents not linked to domestic violence

Variable	Incidents ( <i>n</i> = 401)		Victim Deaths ( <i>n</i> = 2,057)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference No issue	1.02	[.51, 2.05]	1.82	[.85, 3.90]
Shall issue with discretion	.84	[.38, 1.86]	1.19	[.50, 2.79]
Strict shall issue	1.52	[.86, 2.70]	1.83	[.89, 3.79]
Permitless	.68	[.26, 1.79]	1.10	[.25, 4.81]
Purchaser licensing in-person or fingerprint required	<b>.38*</b>	[.21, .70]	<b>.35*</b>	[.19, .63]
Comprehensive background check—point of sale	.84	[.48, 1.47]	1.09	[.44, 2.70]
DVRO prohibition—final orders, dating partner excluded	.88	[.32, 2.44]	.72	[.24, 2.19]
DVRO prohibition includes Ex Parte	1.02	[.53, 1.96]	1.17	[.59, 2.30]
DVRO prohibition Inc. Dating Partners	.88	[.44, 1.77]	.94	[.40, 2.19]
DVRO prohibition with Surrender Provision	.75	[.35, 1.60]	.84	[.35, 1.99]
Violent misdemeanor prohibition	1.32	[.65, 2.68]	.94	[.46, 1.91]
Federal assault weapon ban	.98	[.65, 1.46]	1.11	[.67, 1.85]
State assault weapon ban	.73	[.31, 1.72]	1.01	[.25, 4.11]
Large capacity magazine ban	.65	[.26, 1.63]	.43	[.10, 1.81]
Gun ownership	.77	[.01, 47.8]	.97	[.93, 1.02]
Unemployment	1.04	[.97, 1.11]	1.02	[.93, 1.12]
Percent in poverty	1.00	[.93, 1.07]	.98	[.90, 1.07]
Percent male	.67	[.26, 1.68]	.66	[.24, 1.81]
Percent Black	1.08	[.87, 1.33]	1.26	[.93, 1.69]
Percent married	1.06	[.92, 1.22]	.98	[.84, 1.14]
Percent divorced	1.10	[.77, 1.56]	.94	[.64, 1.38]
Percent Veteran	<b>.79*</b>	[.66, .96]	.89	[.70, 1.13]
Percent living in MSA	1.01	[.98, 1.05]	1.01	[.97, 1.06]
Ethanol consumption per capita	1.20	[.26, 5.50]	.93	[.15, 5.78]
Religious adherence	1.01	[.95, 1.08]	.99	[.91, 1.07]
Percent completed high school	1.05	[.94, 1.18]	1.09	[.96, 1.23]
Drug overdose rate	1.03	[.99, 1.08]	1.01	[.96, 1.06]
Log proportion aged 15–24	.02	[.00, 1.46]	.78	[.53, 1.15]

*Note.* CI = confidence interval; DVRO = domestic violence restraining order; IRR = incident rate ratio; MSA = Metropolitan Statistical Area; SD = standard deviation. Models also include state fixed effects, linear and quadratic time trend terms.

\**p* = .05.

shootings were consistent with our primary models (Tables A6–A7). When we used Poisson fixed-effects regression models, our estimates for the association between the firearm laws of interest and fatal mass shootings were consistent with the estimates in our primary models (Tables A8–A10).

To evaluate whether particularly fatal mass shootings led to passage of the policies at interest, we conducted an analysis that omitted certain observations. We determined that, after a mass shooting with 10 or more fatalities, only two states adopted a law that showed a statistically significant effect in our main models: Connecticut and Colorado both adopted LCM bans after major mass shootings in 2012. We omitted the 2012 observations for these two states and repeated our analysis. When these

observations were omitted, the point estimate for purchaser licensing was similar to our main model of all mass shooting incidents (IRR = .40, 95% CI .23, .69; Table A11) and fatalities (IRR = .33, 95% CI .19, .59). Similarly purchaser licensing was associated with reductions in non-domestic-linked mass shootings (IRR = .38, 95% CI .20, .70; Table A13) and fatalities (IRR = .34, 95% CI .18, .62). For all mass shootings, LCM bans estimates were similar to our primary models but no longer statistically significant for incidents (IRR = .56, 95% CI .30, 1.03; Table A11) and fatalities (IRR = .40, 95% CI .14, 1.14). LCM bans were statistically significant and protective for domestic-linked mass shooting incidents (IRR = .46, 95% CI .23, .89; Table A12) and fatalities (IRR = .45, 95% CI .22, .91).

In the models using different victim fatality thresholds for mass-shootings (five and six victims), the data were too sparse to stratify by domestic violence link. When mass shootings were limited to those with five or more victims ( $n = 198$  shootings), LCM bans were associated with an 80% lower incidence in the full model (IRR = .20, 95% CI .06, .67; Table A14). Although the point estimate for purchaser licensing laws was similar to that for the models with four victim fatality thresholds, it was not statistically significant (IRR = .52, 95% CI .15, 1.83). The estimate for No Issue concealed carry permit laws did change dramatically with the five-fatality threshold and was associated with much higher incidence of fatal mass shootings (IRR = 4.14, 95% CI 1.57, 10.87; Table A14). No Issue concealed carry laws no longer exist, however, as every state now allows for some form of civilian concealed carry. Similarly, when mass shootings were limited to those with six or more victims (Table A15), LCM bans were associated with an 87% lower incidence in the full model (IRR = .14, 95% CI .03, .70) and purchaser licensing laws were not associated with any change.

### 3 | DISCUSSION

The rate at which Americans are murdered in mass shootings has increased in recent years. For decades, horrific mass shootings have prompted intense political debates about whether such incidents can be prevented and what would be the most effective policy responses. Prior research on the effects of firearm policies on fatal mass shootings has important limitations, leaving questions about the effectiveness of strengthened gun regulations such as comprehensive background checks or policies that have been implemented to encourage more civilian gun carrying in public places.

The findings of this study suggest that the most common policy prescriptions offered by advocates on each side of the debate over gun control—comprehensive background checks and assault weapons bans on one side and so-called “Right to Carry” laws reducing restrictions on civilian concealed carry of firearms on the other side—do not seem to be associated with the incidence of fatal mass shootings. Twenty-eight percent of the shootings in this study had some connection to domestic violence, yet we found no evidence that laws designed to keep firearms from perpetrators of domestic violence have affected mass shootings connected to domestic violence. This is somewhat surprising given prior research demonstrating that laws prohibiting persons under domestic violence restraining orders from possessing firearms or with prior convictions for violent misdemeanors were associated with reduced intimate partner homicides (Zeoli et al., 2018).

This study identified two policies associated with reductions in fatal mass shootings—laws requiring firearm purchasers or owners to acquire a license that involves in-person application and/or fingerprinting of applicants and state laws banning the purchase of LCMs or ammunition-feeding devices for semiautomatic firearms. The size of the estimated protective effects of these two policies are striking, although there are large confidence intervals. Firearm purchaser or owner licensing laws have been shown to reduce firearm homicides (Crifasi et al., 2018; Hasegawa, Small, & Webster, 2019; Rudolph et al., 2015; Webster, Crifasi, & Vernick, 2014) and suicides (Crifasi et al., 2015); thus, it

is plausible that these laws reduce firearm availability to individuals who are at risk of committing many forms of lethal violence including multivictim fatal shootings. States with licensing requirements for firearm purchasers typically review broader types of data to identify conditions that prohibit firearm possession and use fingerprints to identify individuals with criminal histories rather than rely solely on biographical information provided by the applicant. In addition, rigorous firearm purchaser licensing may also reduce illegal straw sales and other types of diversion of guns for criminal use (Crifasi, Buggs, Choksy, & Webster, 2017).

Assault rifles are commonly used in mass shootings with the most casualties, and certain design features of these weapons plausibly facilitate the ability of an assailant to rapidly shoot many rounds (e.g., barrel shrouds and pistol grips). But the capacity of the ammunition-feeding device and the ability to quickly reload may be the most relevant feature of firearms that influence the incidence and outcomes of mass shootings. Furthermore, most mass shootings do not involve assault rifles, but many involve the use of LCMs. This may explain why we found that LCM bans were associated with significant reductions in the incidence of fatal mass shootings but that bans on assault weapons had no clear effects on either the incidence of mass shootings or on the incidence of victim fatalities from mass shootings. Studies that have collected detailed data on the specific firearms used in fatal mass shootings show that firearms with LCMs are used roughly twice as frequently as firearms identified as assault weapons. In the Koper et al. (2018) study of mass shootings with four or more victim fatalities during 2009–2016, 19% involved firearms with an LCM and 10% involved firearm models classified as assault weapons. Additionally, Klarevas (2016) found that, during 2006–2015 (after the federal ban expired), 67% of mass shootings with six or more victim fatalities involved the use of an LCM versus 26% with an assault weapon model. Based on the data from Koper (2020), Koper et al. (2018), and Klarevas (2016), our point estimates may be somewhat higher than would be plausible based on the prevalence of LCM use in fatal public mass shootings, although the confidence intervals for these estimates are wide and encompass the estimates of the prevalence of use of LCMs in fatal mass shootings. Also, Koper (2013) found no evidence of decreased use of LCMs in the years after the federal ban in data from four cities that collected such data. This suggests that the supply of pre-ban LCMs was plentiful and that LCMs bans may take years to sufficiently reduce their availability for criminal misuse. Yet our models estimating gradual effects of state LCM bans showed weaker law effects than did the models assuming immediate effects. Passage of LCM bans may coincide with unmeasured factors related to protection against fatal mass shootings other than the comprehensive list of firearm laws examined here. Regardless, there is a clear functional link between LCMs and the ability of a shooter to take more lives. Our estimates of LCM ban impacts show the largest protective effects on high-fatality count shootings and on the number of victims murdered in mass shootings, and the point estimates are large in all model specifications.

It should be noted that the federal assault weapons ban and some state bans of assault weapons have resulted in gun manufacturers making slight alterations in the characteristics of weapon models that are banned. These newer models, assault weapons that were grandfathered by the bans, and the ability to purchase components of assault weapons online provide substitutes for the banned firearms for individuals considering carrying out acts of mass violence. LCM bans may be less likely to result in acquisition of equivalent substitutes as is the case for assault weapon bans.

There are limitations to this study that relate to the lack of systematic data at the state level on determinants of mass shootings that would aid in the modeling of state-level trends of rare events. We drew from prior research on factors associated with state-level rates of homicides and suicides. Mass shootings involve a very small proportion of such events, however, and the conditions that facilitate or suppress lethal violence overall may not explain rare and especially lethal mass shooting events. In addition, this study was not designed to fully explore the relationship between assault weapon bans and their



impact on fatal mass shootings. We did not examine, for example, whether the bans influenced the incidence of assault weapons being used in mass shootings because such data are not available for all fatal mass shootings. We also only examined fatal mass shootings, in which the number of fatalities rather than casualties determined whether an incident was included in the analysis. Booty, O'Dwyer, Webster, McCourt, and Crifasi (2019) have raised the issue of inconsistencies in mass shooting databases that define "mass shooting" differently, and we acknowledge that our results are influenced by the definition that we have chosen.

Despite these limitations, our estimates of the effects of state and federal gun laws on fatal mass shootings are mainly robust to different modeling assumptions and consistent with other research findings. Firearm purchaser licensing requirements are likely to reduce overall firearm availability within a state as well as reduce firearm availability to high-risk individuals. This study provides evidence that firearm purchaser or ownership licensing with fingerprinting reduce the risk of fatal mass shootings in addition to firearm homicides more broadly. LCM bans also seem to reduce the incidence of fatal mass shootings and the number of fatalities in mass shootings. Policy makers should consider these findings when crafting proposals to reduce deaths from mass shootings.

## ACKNOWLEDGMENTS

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## ENDNOTES

<sup>1</sup> The researchers used *Traveler's Guide to the Firearms Laws of the Fifty States* that provides annual ratings for the restrictiveness–permissiveness scale of U.S. gun laws for each state based on assessments of legal professionals who represent gun owners in legal cases. This publication gives a rating between 0 (completely restrictive) and 100 (completely permissive).

<sup>2</sup> *Stanford Mass Shootings in America* collected data on incidents with three or more shooting casualties in a public place, excluding incidents related to gang or narcotic involvement; this data source ceased data collection in early 2016. The Gun Violence Archive (GVA) is a publicly available data source that collects information on incidents that had four or more shooting casualties, but a search query can restrict information to four or more fatalities. Twenty-three incidents were added from Stanford, and 10 incidents were added from GVA.

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APPENDIX

TABLE A1 Mean annual mass shooting rate and fatality rate by state

State	All Fatal Mass Shootings			Domestic-Linked Mass Shootings			Non-Domestic-Linked Mass Shootings		
	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population
Alabama	.04		.21	.01		.09	.02		.08
Alaska	.06		.40	.00		.00	.06		.40
Arizona	.11		.53	.03		.13	.07		.33
Arkansas	.13		.69	.02		.15	.11		.54
California	.06		.32	.03		.13	.03		.19
Colorado	.07		.39	.01		.05	.05		.31
Connecticut	.06		.48	.02		.26	.04		.22
Delaware	.00		.00	.00		.00	.00		.00
Georgia	.06		.28	.02		.08	.04		.20
Hawaii	.05		.25	.03		.10	.02		.15
Idaho	.09		.40	.03		.12	.06		.28
Illinois	.05		.22	.01		.03	.03		.17
Indiana	.09		.40	.04		.16	.06		.24
Iowa	.02		.10	.01		.05	.00		.00
Louisiana	.11		.46	.02		.09	.09		.37
Maine	.08		.30	.05		.20	.02		.10
Maryland	.04		.17	.02		.09	.02		.09
Massachusetts	.02		.09	.005		.02	.01		.07

(Continues)

TABLE A1 (Continued)

State	All Fatal Mass Shootings			Domestic-Linked Mass Shootings			Non-Domestic-Linked Mass Shootings		
	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population
Michigan	.11	.46	.03	.03	.14	.07	.32		
Minnesota	.03	.15	.01	.02	.08	.02	.08		
Mississippi	.09	.43	.00	.00	.43	.07	.43		
Missouri	.08	.35	.02	.07	.28	.06	.28		
Nevada	.08	.86	.03	.13	.73	.05	.73		
New Hampshire	.03	.12	.00	.00	.12	.03	.12		
New Jersey	.03	.11	.01	.03	.08	.02	.08		
New Mexico	.12	.59	.06	.29	.30	.06	.30		
New York	.05	.24	.01	.03	.21	.04	.21		
North Carolina	.11	.46	.01	.03	.43	.10	.43		
North Dakota	.14	.54	.14	.54	.00	.00	.00		
Ohio	.07	.29	.02	.08	.21	.05	.21		
Oklahoma	.08	.42	.03	.16	.26	.04	.26		
Oregon	.06	.30	.04	.17	.03	.01	.03		
Pennsylvania	.04	.19	.02	.07	.12	.02	.12		
Rhode Island	.00	.00	.00	.00	.00	.00	.00		

(Continues)

TABLE A1 (Continued)

State	All Fatal Mass Shootings			Domestic-Linked Mass Shootings			Non-Domestic-Linked Mass Shootings		
	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Mass Shootings per 1 Million Population	Mean Annual Rate of Fatalities from Mass Shootings per 1 Million Population
South Carolina	.18	.88		.05		.20	.14		.68
South Dakota	.08	.34		.08		.34	.00		.00
Tennessee	.07	.29		.02		.07	.05		.20
Texas	.09	.47		.02		.11	.06		.34
Utah	.07	.40		.04		.19	.04		.21
Vermont	.10	.38		.00		.00	.10		.38
Virginia	.08	.48		.03		.13	.06		.35
Washington	.08	.38		.03		.12	.05		.26
West Virginia	.14	.64		.08		.34	.06		.30
Wisconsin	.04	.24		.01		.06	.03		.15
Wyoming	.12	.47		.12		.47	.00		.00
Overall	.07	.36		.03		.12	.04		.23

**TABLE A2** Estimates for incident rate ratios for all fatal mass shootings using gradual assault weapon and LCM ban variables

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 604 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 2,976 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Concealed carry permits—may issue as reference	.94	[.55, 1.59]	1.53	[.83, 2.84]
No issue	(.97)	(.58, 1.63)	(1.45)	(.78, 2.68)
Shall issue with discretion	.95	[.54, 1.69]	1.15	[.59, 2.22]
	(.88)	(.50, 1.55)	(1.08)	(.54, 2.18)
Strict shall issue	1.34	[.75, 2.39]	1.46	[.71, 2.98]
	(1.20)	(.72, 1.99)]	(1.36)	(.75, 2.47)
Permitless	1.35	[.52, 3.51]	1.02	[.31, 3.36]
	(1.24)	(.50, 3.03)	(.95)	(.30, 3.07)
Purchaser licensing <sup>b</sup>	<b>.46*</b>	[.27, .77]	<b>.44*</b>	[.24, .82]
	<b>(.50)</b>	(.34, .73)	<b>(.62)</b>	(.35, 1.07)
Comprehensive background check—point of sale	1.08	[.75, 1.55]	1.42	[.73, 2.79]
	(1.12)	(.78, 1.62)	(1.57)	(.72, 3.43)
DVRO firearm prohibition no dating partners	.83	[.40, 1.72]	.70	[.31, 1.62]
	(.94)	(.43, 2.04)	(.65)	(.30, 1.42)
DVRO firearm prohibition includes ex parte	1.08	[.74, 1.57]	1.10	[.69, 1.76]
	(1.04)	(.68, 1.57)	(.98)	(.59, 1.63)
DVRO firearm prohibition Includes dating partners	.93	[.58, 1.50]	.94	[.51, 1.70]
	(.89)	(.55, 1.42)	(.90)	(.50, 1.63)
DVRO firearm prohibition surrender provision	.75	[.48, 1.15]	.74	[.43, 1.25]
	(.77)	(.48, 1.25)	(.84)	(.48, 1.46)
Violent misdemeanor	1.50	[.82, 2.73]	1.30	[.67, 2.54]
	(1.48)	(.77, 2.84)	(1.30)	(.59, 2.87)
Federal assault weapon ban (gradual)	.95	[.70, 1.29]	1.02	[.65, 1.60]
	(.96)	(.70, 1.32)	(1.06)	(.70, 1.60)
State assault weapon ban (gradual)	.64	[.35, 1.18]	1.01	[.29, 3.47]
	(.66)	(.30, 1.48)	(.90)	(.21, 3.76)
Large-capacity magazine ban (gradual)	.74	[.42, 1.31]	.38	[.10, 1.44]
	<b>(.54)</b>	(.29, 1.00)	<b>(.40)</b>	(.10, 1.60)
Gun ownership	.98	[.95, 1.02]	.96	[.93, 1.00]
Unemployment	1.02	[.95, 1.10]	1.02	[.92, 1.13]
Percent in poverty	1.01	[.95, 1.07]	1.00	[.93, 1.07]
Percent male	.84	[.39, 1.78]	.85	[.37, 1.95]
Percent Black	1.07	[.91, 1.26]	1.19	[.96, 1.46]
Percent married	1.02	[.93, 1.13]	.99	[.88, 1.11]
Percent divorced	1.04	[.80, 1.33]	.99	[.74, 1.32]

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TABLE A2 (Continued)

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 604 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 2,976 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Percent veteran	.87*	[.76, .99]	.94	[.79, 1.10]
Percent living in MSA	1.00	[.98, 1.03]	1.00	[.97, 1.03]
Ethanol consumption per capita	1.13	[.42, 3.02]	.82	[.26, 2.64]
Religious adherence	1.02	[.97, 1.06]	.99	[.93, 1.04]
Percent completed high school	1.06	[.98, 1.14]	1.06	[.98, 1.16]
Drug overdose rate (per 100,000)	1.01	[.97, 1.05]	.99	[.95, 1.03]
Percent aged 15–24	.84	[.69, 1.02]	.88	[.71, 1.09]
Linear time trend	.91	[.80, 1.04]	.90	[.77, 1.04]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]

<sup>a</sup>Parsimonious model results.

<sup>b</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.



**TABLE A3** Estimates for incident rate ratios for domestic-linked fatal mass shootings using gradual assault weapon and LCM ban variables

Variable	Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 182 shootings)		Fatalities in Domestic-Linked Mass Shootings ( <i>n</i> = 842 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Concealed carry permit—may issue reference	.69	[.28, 1.74]	.80	[.29, 2.16]
No issue	(.67)	(.30, 1.51)	(.76)	(.31, 1.87)
Shall issue w/ discretion	1.02	[.42, 2.48]	.83	[.33, 2.07]
	(1.04)	(.46, 2.37)	(.89)	(.37, 2.14)
Strict shall issue	.94	[.35, 2.55]	.82	[.27, 2.55]
	(.96)	(.40, 2.28)	(.91)	(.33, 2.49)
Permitless	2.32	[.34, 15.75]	1.45	[.16, 13.37]
	(1.98)	(.33, 12.01)	(1.37)	(.16, 12.03)
Purchaser licensing <sup>b</sup>	.89	[.34, 2.37]	1.23	[.44, 3.42]
	(.80)	(.33, 1.93)	(1.53)	(.63, 3.77)
Comprehensive background checks—point of sale	1.79	[.89, 3.59]	<b>2.07*</b>	[1.03, 4.17]
	(1.77)	(.90, 3.48)	<b>(2.20)*</b>	(1.12, 4.32)
DVRO prohibition—final orders, dating partner excluded	.84	[.29, 2.45]	.66	[.21, 2.11]
	(.79)	(.33, 1.88)	(.49)	(.20, 1.22)
DVRO prohibition ex parte included	1.46	[.83, 2.58]	1.36	[.71, 2.61]
	(1.47)	(.85, 2.57)	(1.24)	(.63, 2.41)
DVRO includes dating partners	.93	[.59, 1.47]	.83	[.52, 1.33]
	(.89)	(.55, 1.45)	(.79)	(.46, 1.35)
DVRO surrender required	.82	[.42, 1.60]	.77	[.37, 1.60]
	(.85)	(.46, 1.58)	(.90)	(.45, 1.81)
Violent misdemeanor prohibition	1.61	[.45, 5.83]	1.87	[.57, 6.12]
	(1.89)	(.56, 6.37)	(2.15)	(.65, 7.14)
Federal assault weapons/LCM ban (gradual)	1.28	[.66, 2.48]	1.25	[.60, 2.59]
	(.93)	(.58, 1.51)	(.85)	(.49, 1.48)
State assault weapons ban (gradual)	.50	[.17, 1.43]	.62	[.19, 2.04]
	(.51)	(.19, 1.36)	(.68)	(.20, 2.33)
Large-capacity magazine ban (gradual)	.52	[.26, 1.02]	<b>.31*</b>	[.11, .86]
	<b>(.58)*</b>	(.36, .94)	(.37)	(.13, 1.11)
Gun ownership	.97	[.90, 1.02]	.97	[.89, 1.04]
Unemployment	1.05	[.91, 1.22]	1.10	[.93, 1.30]
Percent in poverty	1.01	[.89, 1.15]	1.00	[.88, 1.14]
Percent male	.96	[.27, 3.48]	1.01	[.22, 4.67]
Percent Black	1.02	[.82, 1.28]	1.06	[.83, 1.34]
Percent married	.91	[.77, 1.08]	.92	[.76, 1.11]

(Continues)

TABLE A3 (Continued)

Variable	Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 182 shootings)		Fatalities in Domestic-Linked Mass Shootings ( <i>n</i> = 842 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Percent divorced	.86	[.59, 1.27]	.88	[.56, 1.38]
Percent veteran	1.05	[.88, 1.24]	1.13	[.94, 1.36]
Percent living in MSA	1.00	[.95, 1.05]	.98	[.93, 1.03]
Ethanol consumption per capita	1.24	[.20, 7.88]	1.12	[.16, 7.90]
Religious adherence	1.02	[.94, 1.10]	1.00	[.93, 1.08]
Percent completed high school	1.01	[.91, 1.13]	.98	[.87, 1.10]
Drug overdose rate	.98	[.92, 1.04]	.97	[.91, 1.04]
Percent aged 15–24	1.00	[.74, 1.34]	1.01	[.75, 1.34]
Linear time trend	.97	[.77, 1.21]	1.00	[.79, 1.26]
Quadratic time trend	1.00	[1.00, 1.01]	1.00	[1.00, 1.01]

<sup>a</sup>Parsimonious model results.

<sup>b</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\* *p* = .05.

**TABLE A4** Estimates for incident rate ratios for non-domestic-linked fatal mass shootings using gradual assault weapon And LCM ban variables

Variable	Non-Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 401 shootings)		Fatalities in Non- Domestic-Linked Mass Shootings ( <i>n</i> = 2,057 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Concealed carry permit—may issue reference	1.01	[.50, 2.01]	1.78	[.84, 3.80]
No issue	(1.12)	(.55, 2.30)	(1.74)	(.82, 3.68)
Shall issue w/ discretion	.91	[.41, 2.02]	1.20	[.50, 2.89]
	(.81)	(.36, 1.83)	(1.00)	(.41, 2.43)
Strict shall issue	1.66	[.95, 2.92]	1.85	[.90, 3.83]
	(1.43)	(.87, 2.35)	(1.60)	(.88, 2.93)
Permitless	.75	[.28, 2.04]	1.12	[.25, 5.09]
	(.71)	(.27, 1.87)	(1.02)	(.22, 4.73)
Purchaser licensing <sup>b</sup>	<b>.42*</b>	[.22, .77]	<b>.38*</b>	[.20, .73]
	<b>(.43)*</b>	(.25, .72)	<b>(.48)*</b>	(.26, .91)
Comprehensive background checks—point of sale	.81	[.46, 1.45]	1.07	[.43, 2.68]
	(.86)	(.48, 1.54)	(1.27)	(.42, 3.87)
DVRO prohibition—final orders, dating partner excluded	.84	[.30, 2.39]	.71	[.23, 2.22]
	(1.07)	(.34, 3.37)	(.78)	(.24, 2.57)
DVRO prohibition ex parte included	1.01	[.53, 1.94]	1.16	[.59, 2.30]
	(.94)	(.43, 2.03)	(1.09)	(.50, 2.35)
DVRO includes dating partners	.94	[.47, 1.89]	.97	[.41, 2.29]
	(.86)	(.43, 1.72)	(.91)	(.40, 2.08)
DVRO surrender required	.75	[.35, 1.60]	.83	[.35, 1.98]
	(.78)	(.33, 1.86)	(.91)	(.37, 2.26)
Violent misdemeanor prohibition	1.35	[.69, 2.67]	1.02	[.50, 2.07]
	(1.18)	(.57, 2.46)	(.90)	(.38, 2.15)
Federal assault weapons/LCM ban (gradual)	.86	[.59, 1.27]	1.08	[.62, 1.87]
	(.95)	(.66, 1.38)	(1.15)	(.71, 1.86)
State assault weapons ban (gradual)	.58	[.25, 1.33]	.67	[.17, 2.70]
	(.69)	(.27, 1.78)	(.67)	(.15, 2.90)
Large-capacity magazine ban (gradual)	1.10	[.47, 2.56]	.67	[.16, 2.76]
	(.50)	(.23, 1.09)	(.44)	(.11, 1.75)
Gun ownership	1.00	[.96, 1.04]	.97	[.93, 1.02]
Unemployment	1.03	[.96, 1.10]	1.02	[.93, 1.11]
Percent in poverty	1.00	[.93, 1.07]	.98	[.91, 1.07]
Percent male	.74	[.29, 1.86]	.68	[.25, 1.83]
Percent Black	1.08	[.88, 1.32]	1.25	[.93, 1.69]
Percent married	1.07	[.92, 1.24]	.98	[.83, 1.15]

(Continues)

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TABLE A4 (Continued)

Variable	Non-Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 401 shootings)		Fatalities in Non-Domestic-Linked Mass Shootings ( <i>n</i> = 2,057 fatalities)	
	IRR (IRR <sup>a</sup> )	95% CI (95% CI <sup>a</sup> )	IRR (IRR)	95% CI (95% CI)
Percent divorced	1.13	[.79, 1.60]	.94	[.64, 1.38]
Percent veteran	.79 <sup>*</sup>	[.66, .95]	.89	[.70, 1.12]
Percent living in MSA	1.02	[.98, 1.05]	1.01	[.97, 1.06]
Ethanol consumption per capita	1.09	[.25, 4.76]	.88	[.15, 5.13]
Religious adherence	1.02	[.96, 1.08]	.99	[.91, 1.07]
Percent completed high school	1.07	[.95, 1.19]	1.10	[.97, 1.24]
Drug overdose rate	1.04	[1.00, 1.08]	1.01	[.96, 1.06]
Percent aged 15–24	.78	[.56, 1.07]	.78	[.53, 1.15]
Linear time trend	.90	[.77, 1.05]	.88	[.73, 1.05]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.01]

<sup>a</sup>Parsimonious model results.

<sup>b</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

<sup>\*</sup>*p* = .05.

**TABLE A5** Estimates for incident rate ratios for all fatal mass shootings (>3 victim fatalities), using year fixed effects

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 604 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 2, 976 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.88	[.52, 1.48]	1.31	[.74, 2.32]
No issue				
Shall issue w/ discretion	.83	[.47, 1.47]	.98	[.49, 1.95]
Strict shall issue	1.31	[.72, 2.39]	1.38	[.67, 2.84]
Permitless	1.21	[.49, 3.01]	.86	[.27, 2.73]
Purchaser licensing <sup>a</sup>	<b>.43*</b>	[.26, .70]	<b>.44*</b>	[.26, .75]
Comprehensive background checks—point of sale	1.00	[.69, 1.44]	1.16	[.63, 2.12]
DVRO prohibition—final orders, dating partner excluded	.94	[.46, 1.91]	.80	[.34, 1.85]
DVRO prohibition ex parte included	1.28	[.86, 1.90]	1.38	[.84, 2.25]
DVRO includes dating partners	.91	[.54, 1.51]	.92	[.48, 1.76]
DVRO surrender required	.69	[.45, 1.04]	.65	[.38, 1.10]
Violent misdemeanor prohibition	1.54	[.81, 2.95]	1.33	[.68, 2.59]
Federal assault weapons/LCM ban (gradual)	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]
State assault weapons ban (gradual)	.60	[.27, 1.35]	.84	[.23, 3.08]
Large-capacity magazine ban (gradual)	.56	[.27, 1.16]	.37	[.11, 1.31]
Gun ownership	.97	[.93, 1.01]	.96	[.92, 1.01]
Unemployment	1.08	[.96, 1.22]	1.06	[.91, 1.25]
Percent in poverty	1.01	[.94, 1.07]	.99	[.92, 1.07]
Percent male	.75	[.38, 1.48]	.63	[.28, 1.43]
Percent Black	1.04	[.88, 1.24]	1.11	[.91, 1.35]
Percent married	1.10	[.98, 1.23]	1.02	[.88, 1.19]
Percent divorced	1.18	[.89, 1.56]	1.07	[.76, 1.51]
Percent veteran	<b>.69*</b>	[.55, .87]	<b>.64*</b>	[.48, .84]
Percent living in MSA	1.00	[.98, 1.03]	.99	[.97, 1.02]
Ethanol consumption per capita	1.05	[.39, 2.87]	.86	[.26, 2.81]
Religious adherence	1.01	[.97, 1.05]	.99	[.94, 1.04]
Percent completed high school	1.11	[.98, 1.25]	<b>1.17*</b>	[1.02, 1.34]
Drug overdose rate	1.00	[.97, 1.03]	.98	[.94, 1.02]
Percent aged 15–24	.92	[.73, 1.15]	.88	[.70, 1.10]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A6** Estimates for incident rate ratios for domestic-linked mass shooting (>3 victims), using year fixed effects

Variable	Domestic-Linked Fatal Mass Shooting Incidents ( <i>n</i> = 182 shootings)		Fatalities in Domestic-Linked Mass Shootings ( <i>n</i> = 842 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.64	[.26, 1.59]	.62	[.24, 1.65]
No issue				
Shall issue w/ discretion	.90	[.35, 2.31]	.76	[.27, 2.09]
Strict shall issue	.85	[.31, 2.38]	.70	[.23, 2.11]
Permitless	1.92	[.30, 12.36]	1.06	[.12, 9.36]
Purchaser licensing <sup>a</sup>	.84	[.33, 2.16]	1.46	[.57, 3.71]
Comprehensive background checks—point of sale	1.89	[.86, 4.14]	<b>2.25*</b>	[1.02, 4.96]
DVRO prohibition—final orders, dating partner excluded	.94	[.34, 2.57]	.83	[.28, 2.49]
DVRO prohibition ex parte included	1.65	[.87, 3.16]	1.70	[.81, 3.57]
DVRO includes dating partners	.88	[.54, 1.45]	.83	[.50, 1.39]
DVRO surrender required	.84	[.41, 1.75]	.75	[.33, 1.70]
Violent misdemeanor prohibition	1.90	[.47, 7.77]	1.92	[.52, 7.06]
Federal assault weapons/LCM ban (gradual)	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]
State assault weapons ban (gradual)	.39	[.11, 1.34]	.30	[.09, 1.02]
Large-capacity magazine ban (gradual)	<b>.39*</b>	[.20, .76]	<b>.26*</b>	[.11, .60]
Gun ownership	.96	[.89, 1.03]	.95	[.88, 1.02]
Unemployment	1.04	[.82, 1.31]	1.08	[.82, 1.41]
Percent in poverty	1.03	[.91, 1.18]	1.03	[.89, 1.18]
Percent male	1.04	[.29, 3.78]	1.05	[.22, 4.98]
Percent Black	1.00	[.78, 1.29]	1.03	[.78, 1.36]
Percent married	1.02	[.79, 1.30]	1.07	[.82, 1.40]
Percent divorced	1.10	[.65, 1.84]	1.18	[.69, 2.03]
Percent veteran	.97	[.63, 1.49]	1.04	[.64, 1.71]
Percent living in MSA	1.00	[.95, 1.06]	.98	[.93, 1.04]
Ethanol consumption per capita	.64	[.10, 4.05]	.59	[.08, 4.35]
Religious adherence	1.00	[.92, 1.07]	.98	[.90, 1.06]
Percent completed high school	.99	[.81, 1.22]	.94	[.75, 1.16]
Drug overdose rate	.97	[.92, 1.04]	.97	[.91, 1.03]
Percent aged 15–24	1.13	[.81, 1.56]	1.16	[.82, 1.63]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A7** Estimates for incident rate ratios for non-domestic-linked mass shooting (>3 victims), using year fixed effects

Variable	Non-Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 182 shootings)		Fatalities in Non-Domestic-Linked Mass Shootings ( <i>n</i> = 2,057 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.92	[.46, 1.84]	1.40	[.70, 2.78]
No issue				
Shall issue w/ discretion	.75	[.32, 1.74]	.98	[.38, 2.52]
Strict shall issue	1.58	[.86, 2.91]	1.68	[.82, 3.45]
Permitless	.66	[.27, 1.62]	.85	[.23, 3.13]
Purchaser licensing <sup>a</sup>	<b>.37*</b>	[.21, .67]	<b>.35*</b>	[.19, .65]
Comprehensive background checks—point of sale	.75	[.43, 1.31]	.83	[.38, 1.83]
DVRO prohibition—final orders, dating partner excluded	.92	[.34, 2.49]	.80	[.25, 2.52]
DVRO prohibition ex parte included	1.19	[.64, 2.22]	1.43	[.72, 2.84]
DVRO includes dating partners	.89	[.43, 1.84]	.91	[.37, 2.27]
DVRO surrender required	.66	[.34, 1.30]	.64	[.29, 1.44]
Violent misdemeanor prohibition	1.30	[.62, 2.72]	.93	[.44, 1.97]
Federal assault weapons/LCM ban (gradual)	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]
State assault weapons ban (gradual)	.62	[.24, 1.61]	.81	[.21, 3.13]
Large-capacity magazine ban (gradual)	.74	[.28, 1.97]	.58	[.15, 2.32]
Gun ownership	.98	[.94, 1.03]	.97	[.92, 1.03]
Unemployment	1.12	[.99, 1.27]	1.11	[.96, 1.28]
Percent in poverty	.99	[.91, 1.08]	.96	[.88, 1.06]
Percent male	.66	[.31, 1.41]	<b>.40*</b>	[.17, .95]
Percent Black	1.04	[.84, 1.29]	1.15	[.88, 1.50]
Percent married	<b>1.22*</b>	[1.00, 1.48]	1.08	[.86, 1.36]
Percent divorced	1.26	[.86, 1.87]	1.01	[.64, 1.58]
Percent veteran	<b>.58*</b>	[.43, .79]	<b>.52*</b>	[.35, .76]
Percent living in MSA	1.01	[.98, 1.05]	1.01	[.97, 1.05]
Ethanol consumption per capita	1.09	[.26, 4.47]	.98	[.19, 5.03]
Religious adherence	1.02	[.96, 1.08]	1.00	[.92, 1.08]
Percent completed high school	1.16	[.98, 1.36]	<b>1.27*</b>	[1.05, 1.53]
Drug overdose rate	1.02	[.98, 1.06]	1.00	[.96, 1.05]
Percent aged 15–24	.88	[.59, 1.33]	.76	[.48, 1.21]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

Estimates Using Poisson Fixed-Effects Regression.

**TABLE A8** Estimates for incident rate ratios for all fatal mass shootings (>3 victims), using fixed-effects poisson regression

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 604 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 2, 976 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.79	[.49, 1.28]	1.07	[.61, 1.85]
No issue				
Shall issue w/ discretion	.81	[.46, 1.40]	.90	[.47, 1.75]
Strict shall issue	1.11	[.67, 1.83]	1.06	[.61, 1.83]
Permitless	1.22	[.53, 2.76]	.97	[.39, 2.39]
Purchaser licensing <sup>a</sup>	<b>.49*</b>	[.30, .82]	.61	[.37, 1.01]
Comprehensive background checks—point of sale	1.11	[.79, 1.55]	1.83	[.68, 4.87]
DVRO prohibition—final orders, dating partner excluded	.93	[.44, 1.97]	.79	[.33, 1.88]
DVRO prohibition ex parte included	1.00	[.72, 1.38]	.84	[.57, 1.24]
DVRO includes dating partners	.86	[.58, 1.28]	.85	[.55, 1.32]
DVRO surrender required	.76	[.52, 1.11]	.88	[.53, 1.46]
Violent misdemeanor prohibition	1.42	[.78, 2.59]	.97	[.45, 2.07]
Federal assault weapons/LCM ban (gradual)	.92	[.70, 1.20]	.91	[.67, 1.24]
State assault weapons ban (gradual)	.74	[.45, 1.24]	.93	[.57, 1.52]
Large-capacity magazine ban (gradual)	<b>.48*</b>	[.28, .82]	<b>.32*</b>	[.17, .58]
Gun ownership	.99	[.96, 1.02]	.98	[.95, 1.01]
Unemployment	1.04	[.98, 1.10]	1.03	[.95, 1.11]
Percent in poverty	1.00	[.94, 1.05]	.98	[.93, 1.04]
Percent male	.62	[.29, 1.31]	<b>.43*</b>	[.19, .94]
Percent Black	1.03	[.88, 1.21]	1.12	[.88, 1.43]
Percent married	1.04	[.95, 1.14]	1.01	[.93, 1.10]
Percent divorced	1.01	[.80, 1.28]	1.01	[.76, 1.33]
Percent veteran	<b>.84*</b>	[.74, .96]	.95	[.80, 1.13]
Percent living in MSA	1.00	[.98, 1.03]	.99	[.97, 1.02]
Ethanol consumption per capita	1.37	[.49, 3.81]	1.06	[.33, 3.37]
Religious adherence	1.02	[.98, 1.07]	1.00	[.94, 1.06]
Percent completed high school	1.06	[.98, 1.13]	1.07	[.99, 1.16]
Drug overdose rate	1.02	[.99, 1.05]	1.01	[.98, 1.04]
Percent aged 15–24	.86	[.70, 1.05]	.95	[.76, 1.18]
Linear time trend	.96	[.84, 1.09]	.96	[.84, 1.10]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.



**TABLE A9** Estimates for incident rate ratios for domestic-linked mass shooting (>3 victims), using fixed-effects poisson regression

Variable	Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 182 shootings)		Fatalities in Domestic-Linked Mass Shootings ( <i>n</i> = 842 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference No issue	.64	[.26, 1.58]	.73	[.29, 1.83]
Shall issue w/ discretion	1.00	[.43, 2.32]	.85	[.37, 1.95]
Strict shall issue	.98	[.38, 2.49]	.93	[.34, 2.52]
Permitless	2.94	[.51, 16.83]	2.56	[.42, 15.60]
Purchaser licensing <sup>a</sup>	.95	[.40, 2.22]	1.90	[.72, 4.98]
Comprehensive background checks—point of sale	1.79	[.90, 3.58]	<b>1.92*</b>	[1.05, 3.53]
DVRO prohibition—final orders, dating partner excluded	1.01	[.35, 2.89]	.87	[.29, 2.64]
DVRO prohibition ex parte included	1.59	[.88, 2.85]	1.51	[.81, 2.81]
DVRO includes dating partners	.90	[.57, 1.43]	.80	[.50, 1.28]
DVRO surrender required	.86	[.46, 1.61]	.84	[.45, 1.56]
Violent misdemeanor prohibition	1.60	[.44, 5.79]	1.66	[.55, 5.05]
Federal assault weapons/LCM ban (gradual)	.87	[.50, 1.50]	.89	[.51, 1.53]
State assault weapons ban (gradual)	.53	[.23, 1.20]	.68	[.32, 1.43]
Large-capacity magazine ban (gradual)	<b>.38*</b>	[.21, .70]	<b>.27*</b>	[.12, .59]
Gun ownership	.98	[.91, 1.05]	.97	[.91, 1.04]
Unemployment	1.04	[.91, 1.19]	1.09	[.94, 1.25]
Percent in poverty	1.00	[.88, 1.14]	.99	[.88, 1.12]
Percent male	.87	[.26, 2.89]	.75	[.21, 2.66]
Percent Black	1.02	[.82, 1.27]	1.06	[.85, 1.33]
Percent married	.96	[.83, 1.12]	.96	[.83, 1.11]
Percent divorced	.90	[.64, 1.27]	.95	[.68, 1.34]
Percent veteran	.99	[.82, 1.20]	1.03	[.85, 1.27]
Percent living in MSA	1.00	[.95, 1.06]	.99	[.94, 1.04]
Ethanol consumption per capita	1.10	[.16, 7.46]	1.07	[.13, 8.41]
Religious adherence	1.03	[.94, 1.12]	1.01	[.92, 1.11]
Percent completed high school	1.02	[.92, 1.14]	1.01	[.91, 1.13]
Drug overdose rate	.99	[.93, 1.05]	.98	[.92, 1.04]
Percent aged 15–24	1.07	[.79, 1.47]	1.17	[.83, 1.64]
Linear time trend	1.01	[.80, 1.27]	1.04	[.83, 1.30]
Quadratic time trend	1.00	[.99, 1.01]	1.00	[.99, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A10** Estimates for incident rate ratios for non-domestic-linked mass shooting (>3 victims), using fixed-effects poisson regression

Variable	Non-Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 182 shootings)		Fatalities in Non-Domestic-Linked Mass Shootings ( <i>n</i> = 2,057 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.88	[.46, 1.70]	1.21	[.62, 2.36]
No issue				
Shall issue w/ discretion	.76	[.34, 1.71]	.92	[.38, 2.22]
Strict shall issue	1.28	[.76, 2.18]	1.20	[.66, 2.15]
Permitless	.58	[.24, 1.42]	.75	[.19, 2.92]
Purchaser licensing <sup>a</sup>	<b>.42*</b>	[.22, .80]	<b>.45*</b>	[.25, .83]
Comprehensive background checks—point of sale	.87	[.50, 1.51]	1.84	[.49, 6.87]
DVRO prohibition—final orders, dating partner excluded	.91	[.35, 2.38]	.75	[.25, 2.27]
DVRO prohibition ex parte included	.83	[.46, 1.50]	.68	[.38, 1.22]
DVRO includes dating partners	.84	[.46, 1.53]	.85	[.45, 1.62]
DVRO surrender required	.76	[.39, 1.49]	.99	[.45, 2.20]
Violent misdemeanor prohibition	1.22	[.60, 2.50]	.69	[.28, 1.72]
Federal assault weapons/LCM ban (gradual)	.96	[.65, 1.41]	.95	[.62, 1.45]
State assault weapons ban (gradual)	.79	[.42, 1.48]	.94	[.50, 1.76]
Large-capacity magazine ban (gradual)	.56	[.26, 1.19]	<b>.35*</b>	[.16, .76]
Gun ownership	1.01	[.97, 1.04]	.99	[.96, 1.03]
Unemployment	1.04	[.97, 1.11]	1.01	[.92, 1.11]
Percent in poverty	1.00	[.93, 1.07]	.98	[.92, 1.05]
Percent male	.52	[.19, 1.38]	<b>.40*</b>	[.16, 1.00]
Percent Black	1.02	[.83, 1.25]	1.13	[.81, 1.58]
Percent married	1.08	[.95, 1.23]	1.03	[.90, 1.18]
Percent divorced	1.10	[.79, 1.53]	.99	[.67, 1.46]
Percent veteran	<b>.77*</b>	[.64, .94]	.95	[.75, 1.18]
Percent living in MSA	1.01	[.98, 1.05]	1.01	[.97, 1.05]
Ethanol consumption per capita	1.32	[.30, 5.94]	1.00	[.21, 4.87]
Religious adherence	1.01	[.96, 1.08]	.99	[.92, 1.07]
Percent completed high school	1.05	[.94, 1.18]	1.09	[.97, 1.22]
Drug overdose rate	<b>1.04*</b>	[1.01, 1.08]	1.01	[.98, 1.05]
Percent aged 15–24	.78	[.58, 1.04]	.85	[.61, 1.17]
Linear time trend	.94	[.81, 1.09]	.94	[.80, 1.10]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

Estimates Omitting Major Mass Shooting Incidents From 2012 in Colorado (Aurora) and Connecticut (Newtown).

**TABLE A11** Estimates for incident rate ratios for all fatal mass shootings (>3 victims), Omitting Newtown and Aurora shootings

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 602 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 2, 937 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.93	[.55, 1.57]	1.50	[.81, 2.75]
No issue				
Shall issue w/ discretion	.89	[.50, 1.60]	1.10	[.54, 2.24]
Strict shall issue	1.30	[.73, 2.30]	1.52	[.76, 3.06]
Permitless	1.31	[.51, 3.34]	1.09	[.34, 3.50]
Purchaser licensing <sup>a</sup>	<b>.40*</b>	[.23, .69]	<b>.33*</b>	[.19, .59]
Comprehensive background checks—point of sale	1.11	[.78, 1.59]	1.41	[.73, 2.74]
DVRO prohibition—final orders, dating partner excluded	.89	[.43, 1.85]	.77	[.34, 1.77]
DVRO prohibition ex parte included	1.13	[.77, 1.64]	1.21	[.75, 1.94]
DVRO includes dating partners	.90	[.57, 1.45]	.93	[.51, 1.70]
DVRO surrender required	.76	[.49, 1.17]	.76	[.45, 1.30]
Violent misdemeanor prohibition	1.51	[.78, 2.91]	1.27	[.63, 2.59]
Federal assault weapons/LCM ban (gradual)	.92	[.68, 1.26]	.96	[.63, 1.44]
State assault weapons ban (gradual)	.67	[.33, 1.38]	.90	[.30, 2.74]
Large-capacity magazine ban (gradual)	.56	[.30, 1.03]	.40	[.14, 1.14]
Gun ownership	.98	[.95, 1.02]	.96	[.93, 1.00]
Unemployment	1.02	[.95, 1.10]	1.01	[.91, 1.11]
Percent in poverty	1.01	[.95, 1.07]	1.00	[.93, 1.07]
Percent male	.82	[.39, 1.75]	.90	[.39, 2.08]
Percent Black	1.07	[.91, 1.25]	1.17	[.96, 1.43]
Percent married	1.03	[.94, 1.13]	.99	[.89, 1.11]
Percent divorced	1.02	[.79, 1.31]	.96	[.72, 1.28]
Percent veteran	<b>.86*</b>	[.75, .98]	.91	[.78, 1.07]
Percent living in MSA	1.01	[.98, 1.03]	1.01	[.98, 1.03]
Ethanol consumption per capita	1.08	[.39, 2.97]	.79	[.23, 2.66]
Religious adherence	1.01	[.97, 1.06]	.99	[.94, 1.05]
Percent completed high school	1.06	[.98, 1.14]	1.07	[.99, 1.17]
Drug overdose rate	1.01	[.97, 1.05]	.99	[.95, 1.03]
Percent aged 15–24	.83	[.68, 1.02]	.86	[.69, 1.08]
Linear time trend	.92	[.81, 1.05]	.89	[.77, 1.03]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A12** Estimates for incident rate ratios for domestic-linked mass shooting (>3 victims), Omitting Newtown and Aurora shootings

Variable	Domestic-Linked Fatal Mass Shooting Incidents ( <i>n</i> = 181 shootings)		Fatalities in Domestic-Linked Mass Shootings ( <i>n</i> = 815 fatalities)	
	Law Variables + Covariates		Law Variables + Covariates	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	.67	[.26, 1.70]	.75	[.28, 2.02]
No issue				
Shall issue w/ discretion	.99	[.42, 2.35]	.84	[.34, 2.04]
Strict shall issue	.97	[.36, 2.66]	.93	[.30, 2.86]
Permitless	2.49	[.37, 16.69]	1.72	[.19, 15.52]
Purchaser licensing <sup>a</sup>	.60	[.16, 2.20]	.60	[.14, 2.53]
Comprehensive background checks—point of sale	1.90	[.91, 4.00]	<b>2.17*</b>	[1.05, 4.48]
DVRO prohibition—final orders, dating partner excluded	.91	[.32, 2.60]	.71	[.23, 2.20]
DVRO prohibition ex parte included	1.60	[.89, 2.87]	1.66	[.87, 3.17]
DVRO includes dating partners	.92	[.58, 1.47]	.83	[.51, 1.36]
DVRO surrender required	.84	[.44, 1.62]	.78	[.38, 1.62]
Violent misdemeanor prohibition	1.76	[.42, 7.41]	1.81	[.51, 6.47]
Federal assault weapons/LCM ban (gradual)	.87	[.50, 1.52]	.85	[.46, 1.57]
State assault weapons ban (gradual)	.34	[.10, 1.14]	<b>.24*</b>	[.06, .90]
Large-capacity magazine ban (gradual)	<b>.46*</b>	[.23, .89]	<b>.45*</b>	[.22, .91]
Gun ownership	.97	[.90, 1.05]	.97	[.90, 1.05]
Unemployment	1.05	[.90, 1.21]	1.08	[.91, 1.28]
Percent in poverty	1.01	[.88, 1.15]	1.00	[.87, 1.14]
Percent male	1.09	[.31, 3.90]	1.27	[.29, 5.52]
Percent Black	1.00	[.80, 1.25]	1.01	[.80, 1.27]
Percent married	.96	[.82, 1.13]	.97	[.81, 1.16]
Percent divorced	.86	[.59, 1.27]	.82	[.52, 1.27]
Percent veteran	1.00	[.83, 1.21]	1.06	[.87, 1.30]
Percent living in MSA	1.00	[.95, 1.06]	.99	[.94, 1.05]
Ethanol consumption per capita	.93	[.14, 6.29]	.83	[.11, 6.07]
Religious adherence	1.02	[.94, 1.11]	1.01	[.94, 1.10]
Percent completed high school	1.02	[.91, 1.15]	1.01	[.89, 1.13]
Drug overdose rate	.98	[.92, 1.04]	.98	[.91, 1.05]
Percent aged 15–24	1.00	[.75, 1.33]	.99	[.75, 1.30]
Linear time trend	.98	[.79, 1.23]	1.02	[.81, 1.28]
Quadratic time trend	1.00	[.99, 1.01]	1.00	[1.00, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A13** Estimates for incident rate ratios for non-domestic-linked mass shooting (>3 victims), Omitting Newtown and Aurora shootings

Variable	Non-Domestic-Linked Fatal Mass Shooting incidents ( <i>n</i> = 181 shootings)		Fatalities in Non-Domestic-Linked Mass Shootings ( <i>n</i> = 2,045 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	1.00	[.49, 2.03]	1.72	[.79, 3.75]
No issue				
Shall issue w/ discretion	.81	[.36, 1.82]	1.06	[.42, 2.68]
Strict shall issue	1.51	[.85, 2.69]	1.79	[.86, 3.72]
Permitless	.67	[.25, 1.78]	1.08	[.24, 4.76]
Purchaser licensing <sup>a</sup>	<b>.38*</b>	[.20, .70]	<b>.34*</b>	[.18, .62]
Comprehensive background checks—point of sale	.85	[.48, 1.51]	1.11	[.45, 2.74]
DVRO prohibition—final orders, dating partner excluded	.90	[.33, 2.52]	.75	[.25, 2.22]
DVRO prohibition ex parte included	1.04	[.54, 2.01]	1.20	[.60, 2.39]
DVRO includes dating partners	.90	[.45, 1.81]	.98	[.43, 2.26]
DVRO surrender required	.75	[.35, 1.61]	.84	[.35, 2.00]
Violent misdemeanor prohibition	1.33	[.65, 2.74]	.99	[.48, 2.06]
Federal assault weapons/LCM ban (gradual)	.98	[.65, 1.47]	1.09	[.66, 1.80]
State assault weapons ban (gradual)	.72	[.31, 1.69]	.94	[.24, 3.75]
Large-capacity magazine ban (gradual)	.67	[.27, 1.69]	.47	[.12, 1.94]
Gun ownership	1.00	[.96, 1.04]	.97	[.92, 1.02]
Unemployment	1.03	[.96, 1.11]	1.01	[.92, 1.11]
Percent in poverty	1.00	[.94, 1.07]	.98	[.91, 1.07]
Percent male	.68	[.27, 1.73]	.69	[.25, 1.93]
Percent Black	1.08	[.87, 1.33]	1.27	[.94, 1.72]
Percent married	1.06	[.92, 1.21]	.98	[.84, 1.14]
Percent divorced	1.10	[.77, 1.57]	.94	[.64, 1.37]
Percent veteran	<b>.79*</b>	[.65, .96]	.88	[.69, 1.11]
Percent living in MSA	1.01	[.98, 1.05]	1.02	[.97, 1.06]
Ethanol consumption per capita	1.13	[.24, 5.21]	.86	[.13, 5.51]
Religious adherence	1.01	[.95, 1.08]	.99	[.91, 1.07]
Percent completed high school	1.06	[.95, 1.19]	1.11	[.97, 1.26]
Drug overdose rate	1.04	[1.00, 1.08]	1.01	[.96, 1.06]
Percent aged 15–24	.78	[.57, 1.07]	.80	[.54, 1.18]
Linear time trend	.91	[.77, 1.07]	.86	[.72, 1.04]
Quadratic time trend	1.00	[1.00, 1.00]	1.00	[1.00, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

Estimates Using Different Definitions of “Mass Shooting”—Shootings With Fatalities > 4 and Shootings With Fatalities > 5.

**TABLE A14** Estimates for incident rate ratios for all mass shooting (>4 victims)

Variable	All Fatal Mass Shooting Incidents ( <i>n</i> = 198 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 1, 352 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	<b>4.14*</b>	[1.57, 1.87]	<b>8.41*</b>	[3.00, 23.57]
No issue				
Shall issue w/ discretion	.96	[.31, 2.94]	1.23	[.35, 4.30]
Strict shall issue	2.24	[.91, 5.49]	2.60	[.99, 6.78]
Permitless	.91	[.14, 5.78]	1.53	[.19, 12.43]
Purchaser licensing <sup>a</sup>	.52	[.15, 1.83]	.44	[.09, 2.18]
Comprehensive background checks—point of sale	1.94	[.85, 4.41]	3.65	[.74, 18.05]
DVRO prohibition—final orders, dating partner excluded	.70	[.22, 2.21]	.63	[.15, 2.61]
DVRO prohibition ex parte included	.97	[.54, 1.73]	1.11	[.55, 2.26]
DVRO includes dating partners	.58	[.30, 1.13]	.61	[.24, 1.52]
DVRO surrender required	.75	[.40, 1.42]	.79	[.32, 1.95]
Violent misdemeanor prohibition	2.10	[.55, 8.02]	1.34	[.35, 5.05]
Federal assault weapons/LCM ban (gradual)	1.00	[.50, 2.02]	.92	[.42, 2.01]
State assault weapons ban (gradual)	.58	[.13, 2.62]	1.41	[.09, 2.94]
Large-capacity magazine ban (gradual)	<b>.20*</b>	[.06, .65]	<b>.08*</b>	[.01, .92]
Gun ownership	.97	[.91, 1.02]	.94	[.88, 1.00]
Unemployment	1.08	[.97, 1.21]	1.08	[.95, 1.24]
Percent in poverty	.95	[.85, 1.06]	.93	[.81, 1.06]
Percent male	.43	[.12, 1.59]	.39	[.08, 1.94]
Percent Black	.92	[.66, 1.28]	1.05	[.68, 1.61]
Percent married	.90	[.80, 1.01]	.88	[.75, 1.04]
Percent divorced	.81	[.55, 1.19]	.83	[.53, 1.29]
Percent veteran	.88	[.69, 1.12]	.94	[.70, 1.26]
Percent living in MSA	.98	[.94, 1.02]	.97	[.92, 1.02]
Ethanol consumption per capita	.86	[.13, 5.73]	.90	[.09, 9.22]
Religious adherence	.93	[.86, 1.00]	<b>.90*</b>	[.82, 1.00]
Percent completed high school	<b>1.17*</b>	[1.05, 1.30]	<b>1.19*</b>	[1.05, 1.34]
Drug overdose rate	1.02	[.96, 1.07]	.99	[.94, 1.04]
Percent aged 15–24	1.14	[.84, 1.55]	1.13	[.77, 1.65]
Linear time trend	.96	[.77, 1.20]	.93	[.73, 1.19]
Quadratic time trend	1.00	[.99, 1.00]	1.00	[1.00, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

**TABLE A15** Estimates for incident rate ratios for all mass shooting (>5 victims)

Variable	All Fatal Mass Shooting Incidents (>5 victims) ( <i>n</i> = 92 shootings)		Fatalities in All Fatal Mass Shootings ( <i>n</i> = 822 fatalities)	
	IRR	95% CI	IRR	95% CI
Concealed carry permit—may issue reference	<b>1.77*</b>	[1.99, 58.31]	<b>25.74*</b>	[4.03, 164.2]
No issue				
Shall issue w/ discretion	2.13	[.27, 16.58]	1.95	[.17, 21.93]
Strict shall issue	1.93	[.30, 12.41]	1.79	[.22, 14.29]
Permitless	3.81	[.34, 42.94]	2.99	[.22, 41.29]
Purchaser licensing <sup>a</sup>	.87	[.32, 2.33]	.69	[.24, 2.05]
Comprehensive background checks—point of sale	2.27	[.52, 9.84]	6.98	[.82, 59.36]
DVRO prohibition—final orders, dating partner excluded	.61	[.11, 3.35]	.36	[.05, 2.62]
DVRO prohibition ex parte included	1.16	[.48, 2.79]	1.07	[.41, 2.83]
DVRO includes dating partners	.98	[.27, 3.58]	.94	[.21, 4.24]
DVRO surrender required	.51	[.15, 1.76]	.88	[.19, 4.02]
Violent misdemeanor prohibition	.72	[.16, 3.26]	.27	[.04, 1.65]
Federal assault weapons/LCM ban (gradual)	.77	[.31, 1.96]	.69	[.21, 2.22]
State assault weapons ban (gradual)	1.04	[.17, 6.36]	1.38	[.12, 15.48]
Large-capacity magazine ban (gradual)	<b>.14*</b>	[.03, .70]	<b>.05*</b>	[.00, .51]
Gun ownership	.96	[.89, 1.04]	.92	[.84, 1.01]
Unemployment	1.16	[.98, 1.37]	1.17	[.95, 1.45]
Percent in poverty	.93	[.80, 1.10]	.88	[.72, 1.07]
Percent male	.26	[.03, 2.14]	.42	[.04, 4.62]
Percent Black	.82	[.52, 1.30]	.91	[.53, 1.57]
Percent married	1.05	[.86, 1.28]	1.03	[.79, 1.33]
Percent divorced	1.03	[.56, 1.91]	1.06	[.54, 2.08]
Percent veteran	.86	[.64, 1.18]	.92	[.63, 1.34]
Percent living in MSA	.96	[.88, 1.05]	.94	[.84, 1.04]
Ethanol consumption per capita	5.43	[.23, 126.96]	1.79	[.04, 77.79]
Religious adherence	.91	[.80, 1.03]	.88	[.75, 1.03]
Percent completed high school	1.16	[.97, 1.39]	1.19	[.97, 1.47]
Drug overdose rate	.98	[.89, 1.08]	.95	[.86, 1.05]
Percent aged 15–24	1.16	[.66, 2.04]	1.20	[.59, 2.45]
Linear time trend	1.10	[.83, 1.44]	.99	[.74, 1.33]
Quadratic time trend	1.00	[.99, 1.01]	1.00	[.99, 1.01]

<sup>a</sup>Handgun purchaser licensing with in-person application and/or fingerprinting of applicant.

\**p* = .05.

# EXHIBIT 108



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## Mass Shootings in America: Moving Beyond Newtown

James Alan Fox and Monica J. DeLateur

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# Mass Shootings in America: Moving Beyond Newtown

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**James Alan Fox<sup>1</sup> and Monica J. DeLateur<sup>1</sup>**

## Abstract

Mass shootings at a Connecticut elementary school, a Colorado movie theater, and other venues have prompted a fair number of proposals for change. Advocates for tighter gun restrictions, for expanding mental health services, for upgrading security in public places, and, even, for controlling violent entertainment have made certain assumptions about the nature of mass murder that are not necessarily valid. This article examines a variety of myths and misconceptions about multiple homicide and mass shooters, pointing out some of the difficult realities in trying to avert these murderous rampages. While many of the policy proposals are worthwhile in general, their prospects for reducing the risk of mass murder are limited.

## Keywords

mass murder, subtypes, school shootings, trends, public policy, correlates

Calendar year 2012 offered a rich variety of hot topics for media coverage and public debate. The political campaign season featured an unprecedented number of presidential hopefuls and televised candidate debates, while the year's hurricane season resulted in wide-ranging destruction, primarily from Superstorm Sandy. In addition, the debate over universal health care culminated in the most highly anticipated U.S. Supreme Court ruling in decades.

Nothing, however, surpassed the amount and intensity of interest, at least from a news perspective, than the scourge of mass murder, specifically, a movie theater rampage in Aurora, Colorado, in July and then a public school massacre in Newtown, Connecticut, in mid-December. As one measure of media attention, the Associated Press's year-end poll of news editors placed mass shootings as the leading news story of 2012 (Associated Press, 2012).

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Even before the final death toll from the shooting spree at Newtown's Sandy Hook Elementary School was determined, politicians, pundits, and professors of various disciplines were all over the media, pushing their proposals for change. Some talked about the role of guns, others about access to mental health services, and still more about the need for enhanced security in schools and other public places. Whatever their agenda or the passion behind it, these advocates made certain assumptions concerning patterns in mass murder and the profile of mass killers. Unfortunately, these assumptions were not always consistent with the facts.

Until fairly recently, criminologists had all but ignored the topic of mass murder, and mass shootings in particular (see Bowers, Holmes, & Rhom, 2010; DeLisi & Scherer, 2006; Liwerant, 2007). Some scholars may have regarded mass killing, the murder of four or more victims in a single episode, as merely a special case of criminal homicide, explainable by the same criminological theories applied to single-victim incidents and, therefore, not deserving of special treatment. Other criminologists may have considered mass murder as primarily a matter of psychopathology—a crime perpetrated by individuals who suffer from profound mental disorders (e.g., psychosis) and, therefore, best analyzed through the lens of psychiatry. Finally, some may have assumed that such incidents are not only rare but also aberrational and, therefore, unworthy of significant research attention. More importantly, opportunities for examining mass murder in a systematic fashion have been hindered by limited availability of primary data: Mass murderers are typically deceased, inaccessible for legal reasons, or unwilling or unable to cooperate with research investigators (see Bowers et al., 2010; Fox & Levin, 2003).

Perhaps because of the limited body of systematic research on mass murder, much of the public discourse is grounded in myth and misunderstanding about the nature of the offense and those who perpetrate it. In this article, we attempt to identify and assess a number of these misconceptions that seem to have encouraged policy responses with a slim probability of achieving their desired outcome—eliminating the risk of mass murder.

## **Myth: Mass Murderers Snap and Kill Indiscriminately**

One of the earliest systematic examinations of mass murder incidents challenged the widespread view in the popular press and professional literature that mass murderers are crazed lunatics who suddenly snap, go berserk, and kill indiscriminately (Levin & Fox, 1985). Over the past few decades, moreover, this notion has persisted, at least in the public's mind, in large part because of the selective attention to the most extreme and unusual cases.

However, mass murder rarely involves a sudden explosion of rage. To the contrary, mass killers typically plan their assaults for days, weeks, or months (see, for example, Fox & Levin, 2012; Walkup & Rubin, 2013). These preparations include where, when, and who to kill, as well as with what weapons they will strike. These assailants are deliberate, determined to kill, with little regard for what obstacles are placed in their path.

For example, Dylan Klebold and Eric Harris, the two adolescents responsible for the 1999 Columbine High School massacre, purposely chose Hitler's birthday for their attack (out of admiration for the dictator's power) and spent long hours in the woods fine-tuning their marksmanship skills. They even conceived a grand follow-up plan should they survive the school shooting: to hijack an airplane and fly it into the skyline of New York City (and this was 2 years before the September 11, 2001, acts of terrorism).

The level of detailed planning may help to explain the calm demeanor exhibited by mass murderers, even in the midst of chaos. Witnesses to a mass shooting often report, for example, that the gunman appeared relaxed, even smiling, while killing or injuring dozens of innocent victims (see Aitken, Oosthuizen, Emsley, & Seedat, 2008). Mass murderers have been known to develop and follow a mental script, one that is rehearsed over and over again, to the point where they become comfortable with the mission.

Whatever the style of killing, the motives for mass murder are organized around five primary themes that can occur singly or in combination (Fox & Levin, 1998). Specifically,

1. Revenge (e.g., a deeply disgruntled individual seeks payback for a host of failures in career, school, or personal life);
2. Power (e.g., a "pseudo-commando" style massacre perpetrated by some marginalized individual attempting to wage a personal war against society);
3. Loyalty (e.g., a devoted husband/father kills his entire family and then himself to spare them all from a miserable existence on earth and to reunite them in the hereafter);
4. Terror (e.g., a political dissident destroys government property, with several victims killed as "collateral damage," to send a strong message to those in power); and
5. Profit (e.g., a gunman executes the customers and employees at a retail store to eliminate all witnesses to a robbery).

Among these types, revenge motivation is, by far, the most commonplace (see Knoll, 2010; Leyton, 1986). Mass murderers often see themselves as victims—victims of injustice (Bowers et al., 2010; Palermo, 1997). They seek payback for what they perceive to be unfair treatment by targeting those they hold responsible for their misfortunes. Most often, the ones to be punished are family members (e.g., an unfaithful wife and all her children) or coworkers (e.g., an overbearing boss and all his employees). In such cases, there may be a primary target (which itself can be a place, such as a company, a school, or an agency) while others are killed as surrogates, in what has been termed "murder by proxy" (see Frazier, 1975).

Sometimes, mass murderers target an entire category of people (e.g., women, Jews, immigrants, Whites, Blacks, etc.), constituting a hate crime in the extreme. The victims may be chosen randomly, but the type of victim or the place to find them may not be. In such cases, strangers are punished just because of their class membership or group association.

The rarest form of mass murder is the completely random attack (often in a public place) committed by someone who in his or her paranoid thinking suspects that the whole world is corrupt and unfair (Petee, Padgett, & York, 1997). The level of paranoia may be truly psychotic (e.g., God, the President, or some other powerful entity is behind a wide-ranging conspiracy) or involve a lesser form of paranoid personality disorder in which the perpetrator consistently misconstrues innocent acts or gestures by others as purposely malicious.

Even though most mass murderers deliberately target specific people or places, it is, of course, the seemingly senseless random massacres that are the most frightening to people. After all, they can happen at any place, at any time, and to anyone—usually without warning—and, for this reason, random acts of mass murder, although the least frequent form, receive the most attention by the mass media and the public alike.

### **Myth: Mass Shootings Are on the Rise**

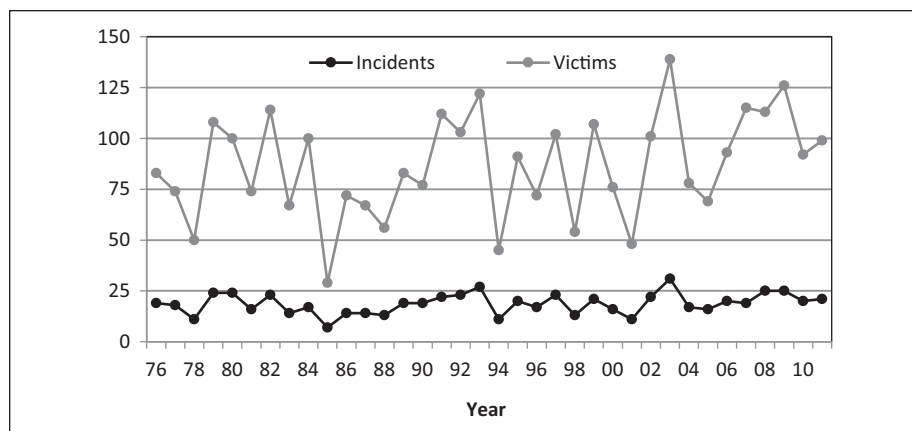
The recent carnages in Newtown, Connecticut; Aurora, Colorado; and elsewhere have compelled many observers to examine the possible reasons behind the rise in mass murder. The New York Times columnist David Brooks noted the number of schizophrenics going untreated (Brooks, 2012). Former President Bill Clinton and other gun-control advocates have pointed to the expiration of the 1994 Federal Assault Weapons Ban as the culprit, while gun-rights proponents have argued that the body counts would be lower were more Americans armed and ready to overtake an active shooter. There is, however, one not-so-tiny flaw in all the various theories and speculations for the presumed increase in mass shootings: Mass shootings have not increased in number or in overall death toll, at least not over the past several decades.

The moral panic and sense of urgency surrounding mass murder have been fueled by various claims that mass murders, and mass shootings in particular, are reaching epidemic proportions. For example, the Mother Jones news organization, having assembled a database of public mass shootings from 1982 through 2012, has reported a recent surge in incidents and fatalities, including a spike and record number of casualties in the year 2012 (Follman, Pan, & Aronsen, 2013).

It is critical to note that Mother Jones did not include all mass shootings in their analysis but instead attempted to delineate those that were senseless, random, or at least public in nature. Mother Jones settled on several criteria for inclusion in its mass shootings database, specifically the following:

- The shooter took the lives of at least four people;
- The killings were carried out by a lone shooter;
- The shootings happened during a single incident and in a public place; and
- The murders were not related to armed robbery or gang activity.

By virtue of these selection rules, mass shootings involving family members were excluded, even though they too can involve large body counts. Other massive shootings were ignored because of their relation to gang activity or some criminal enterprise.



**Figure 1.** Mass shootings in the United States, 1976-2011.

Not only is Mother Jones's decision to disqualify cases based on certain criteria that are hard to defend but also the criteria themselves were not necessarily applied consistently (see Fox, 2013). The Columbine mass murder and the Westside Middle School massacre, for example, were included despite the fact that both were carried out by pairs of armed assailants. In response to criticism concerning the definitional concerns, Mother Jones emphasized two main themes: the need to focus more narrowly on "senseless" public shootings and the importance of investigating mass shootings beyond just the incident counts (Follman et al., 2013). Obviously, public shootings are worthy of discussion, but then so are mass killings in families or those that are designed to further some criminal enterprise. Widening the net by including mass shootings in all forms can only add to our understanding of extreme killing.

As it happens, Mother Jones's claim concerning a rise in mass shootings doesn't stand when considering the full range of cases. Figure 1 displays the number of mass shooting incidents and victims from 1976 through 2011, based on data from the FBI's Supplementary Homicide Reporting (SHR) program (along with the missing Florida data for 1996-2011 drawn directly from the state's homicide report records). These reflect all 672 mass shootings with at least four fatalities reported to local law enforcement authorities as part of the routine collection of crime statistics. Unlike the Mother Jones approach, these data do not exclude cases based on motive, location, or victim-offender relationship. They only exclude incidents in which fewer than four victims (other than the assailant) were killed, murders committed with a weapon other than a firearm, or isolated cases that may have occurred in jurisdictions that did not report homicide data to the FBI. In addition, only because of the usual time lag in crime reporting, the figures for 2012 were not yet available.

According to these expanded data, over the past few decades, there have been, on average, nearly 20 mass shootings a year in the United States. Most, of course, were

nowhere as deadly as the recent massacres in Aurora and Newtown that have countless Americans believing that a new epidemic is on them and that have encouraged healthy and often heated debate concerning causes and solutions.

Without minimizing the pain and suffering of the hundreds of those who have been victimized in recent attacks, the facts clearly say that there has been no increase in mass shootings and certainly no epidemic (see Duwe, 2004). What is abundantly clear from the full array of mass shootings is the largely random variability in the annual counts (Best, 2013). There have been several points in time when journalists and others have speculated about a possible epidemic in response to a flurry of high-profile shootings. Yet, these speculations have always proven to be incorrect when subsequent years reveal more moderate levels.

The year 1991, for example, saw a 35-year-old gunman kill 23 people at a cafeteria in Killeen, Texas, and a disgruntled graduate student murder 5 at the University of Iowa, along with other sensationalized incidents. The surge in mass killings was so frightening that a rumor spread throughout the nation that there would be a mass murder at a college in the Northeast on Halloween (Farrish, 1991). Fortunately, October 31 came and went without anything close to a massacre taking place.

And as of this writing, more than one third of the way into 2013, Mother Jones has identified but one incident that fits its definition of a senseless mass shooting. If this is any indication, the tendency for bad years to be followed by better ones will hold true once again.

## **Myth: Recent Mass Murders Involve Record-Setting Body Counts**

If anything has increased with regard to mass murder, it is the public's fear, anxiety, and widely held belief that the problem is getting worse (see Baldassare, Bonner, Petek, & Shrestha, 2013). Unquestionably, this perception is linked to the style and pervasiveness of news-media coverage, owing in large part to advances in technology (Heath & Gilbert, 1996). In 1966, when Charles Whitman opened fire from atop the 307-foot tower at the University of Texas in Austin, there were no 24-hr news stations or fleets of satellite trucks to relay images of tragedy as they unfolded. CNN wasn't born until the 1980s, and the other major cable news outlets not until much later. Today, of course, the American public can watch chilling live coverage of some far-away mass shooting by turning on their high-definition television screens, making it feel as if the event is happening just down the street.

The emotional impact of the Sandy Hook slaughter was intensified by the immediacy of news reports. Young children, their eyes fresh with tears and their faces filled with terror from just having fled their embattled school building, were swarmed by reporters holding microphones and cameras. The news coverage of Sandy Hook had Americans glued to their TV sets. According to a USA Today/Gallup poll of more than 1,000 adults, half the respondents watched the news reporting "very closely," while 90% indicated watching at least "somewhat closely" (Saad, 2012).



The extensive news focus on school shootings certainly had an impact on perception and fear. The same USA Today/Gallup poll found that nearly one quarter of those surveyed believed that a shooting spree such as Sandy Hook was “very likely” to occur in their own community and more than half thought that it was at least “somewhat likely” (Saad, 2012).

Meanwhile, as news of the Sandy Hook shooting was still unfolding and before any perpetrator or motive was identified, scores of journalists were asking whether this was the worst school shooting in history. It didn’t matter that deadlier episodes had occurred overseas (the 2004 school siege in Russia), at a college setting (Virginia Tech in 2007) or involving means other than gunfire (the 1927 school explosion in Bath, Michigan), reporters were eager to declare the Sandy Hook massacre as some type of new record (see Best, 2013).

When it comes to news reporting, the penchant for some journalists to characterize tragedy as some kind of record is mystifying. Whether the latest massacre is in any sense the worst doesn’t change the associated pain and suffering of the victims, their families, and the community at large.

At the same time, there is a definite downside to media overexposure and obsession with records, and that is the possibility that some like-minded and obscure individual will see an opportunity for recognition and perhaps a chance to break a record for bloodshed (Dietz, 1986). Of course, the overwhelming majority of Americans who watch the news about a mass shooting identify with the pain and suffering of the victims and their families. However, a few individuals instead identify with the power of the perpetrator, empathize with his or her frustrations, and maybe even admire his or her instant but undeserved celebrity.

The dynamics of imitation and reinforced learning suggest that people are far more likely to model the behavior of others if they perceive the act as reaping some reward (see Bandura, 1978). Many rational adults would question how compelling Columbine shooters Dylan Klebold and Eric Harris could be as role models when, at the end of the school day, they were found lying dead from self-inflicted gunshot wounds. However, teenagers can often interpret outcomes very differently from their parents. To an unhappy, alienated adolescent, the two gunmen could be seen as heroes: Not only had they avenged the bullying, intimidation, and acts of ostracism that are commonplace in sprawling high schools such as Columbine but also they were famous for it. When TIME magazine placed the gunmen on its May 3, 1999, cover with the headline “The Monsters Next Door,” most readers saw the “cover boys” as just that—monsters. A few like-minded teenagers would have considered them celebrities who had the courage to get even, to claim a victory for bullying victims everywhere (see Paton, 2012).

There are many curious examples of copycat offending, and not just among children and adolescents. The U.S. Postal Service suffered a series of shootings, beginning with the 1986 massacre of 14 postal employees in Edmond, Oklahoma, from which came the well-known phrase, “going postal.” Some of these perpetrators spoke openly about other postal rampages that had preceded their own. Adam Lanza, the Sandy Hook school shooter, was reportedly obsessed with Anders Breivik, a Norwegian mass



murderer responsible for killing 77 people, and he, in turn, was fascinated with the notorious Unabomber, Theodore Kaczynski.

This so-called “copycat effect,” while widely embraced in the popular press, has received only limited attention in scholarly research, and mostly in the area of suicide (see Coleman, 2004). Sociologist David Phillips (1982) gave the imitation hypothesis more than a modicum of credibility with a series of studies related to the publicity surrounding suicides and subsequent increases in attempted or completed suicides. Phillips similarly observed, based on quasi-experimental time series data, a lagged impact of executions and major prize fights on rates of homicide (Phillips, 1983). Phillips’s findings, however, have been seriously criticized for violation of model assumptions and for capitalizing on chance results (Baron & Reiss, 1985).

Given the paucity of hard evidence about the exact magnitude of copycatting, particularly with regard to multiple murders, we are left with but an array of anecdotes suggesting how mass murderers were drawn to those who perpetrated similar crimes. Even then, there is no certainty that the murders would not have occurred regardless of modeling. At best, copycatting might influence the form, and not necessarily the inspiration, for mass murder.

Whatever the extent of imitation, it is important that media coverage not obsess over large and especially record-setting body counts and avoid the tendency to sensationalize already sensational events (see Duwe, 2000). Indeed, there is a critical distinction between shedding light on a crime and a spotlight on the criminal.

## **Myth: Violent Entertainment, Especially Video Games, Are Causally Linked to Mass Murder**

Besides the imitation of notorious crimes and criminals, fictional portrayals of violence can provide a source for modeling behavior. Certainly, concern over the negative impact of violent entertainment extends back generations. Yet, the realism offered by today’s entertainment options has intensified the debate.

It can be tempting to try to implicate entertainment media—especially video games—for various stunning episodes of extreme violence. A Gallup poll taken in the wake of the April, 1999, Columbine massacre found that 62% of the more than 1,000 adults surveyed nationwide felt that entertainment media was a major cause of school violence (Newport, 1999), and 83% supported restrictions on sales of violent media to children (see Carlson, 2002). Furthermore, a Gallup poll of approximately 1,000 adults nationwide taken immediately following the December 2012, Sandy Hook shooting found that 78% of respondents believed that reducing the depiction of gun violence in entertainment media would be effective in decreasing the risk of mass shootings (Newport, 2012).

It is not surprising that most schoolyard shooters and many adult mass murderers played violent video games in their spare time. To be sure, violent people are often attracted to violent entertainment, on TV, in film, or through game consoles. However, the ability to document a direct causal link indicating that consuming violent entertainment leads to violent behavior has eluded social science researchers for years (Brief of Social Scientists et al., 2010; Ferguson, 2011; Grimes, Anderson, & Bergen, 2008).

Much was written in the popular press about the fact that Sandy Hook shooter Adam Lanza spent long hours alone in the basement of his Newtown home playing violent video games (see, for example, Edelman, 2013). However, his gaming may be more a symptom of his personality and temperament than the cause. As a socially awkward youngster, reportedly with Asperger's syndrome, his social isolation may be the key to his preoccupation with gaming as well as his rampage against an unwelcoming society.

The entertainment industry has, at times, been used as a convenient scapegoat, and censorship as an easy solution. Lawsuits directed against various media organizations have occasionally been launched, albeit unsuccessfully, when it was discovered that some mass murderer had been obsessed with violent entertainment. Such concerns also led to the passage of a 2005 California ban on the sale of violent video games to minors, although the U.S. Supreme Court ultimately judged the prohibition to be unconstitutional in a 7-2 decision (*Brown, Governor of California, et al., v. Entertainment Media Association et al.*, 2011). It has long been easy to point fingers at this profitable industry, while ignoring some of the root causes of violence that are much more difficult to resolve.

To the extent that youngsters spend endless hours being entertained by violence says more about the lack of parental supervision and control. It isn't that the entertainment media are so powerful; it is that our other institutions—family, school, religion, and neighborhood—have grown weaker with respect to socializing children (see Flannery, Modzeleski, & Kretschmar, 2013; Paton, 2012). Banning violent entertainment may be an easy fix, especially when policymakers are unwilling or unable to deal with the more fundamental causes of violence.

### **Myth: Greater Attention and Response to the Telltale Warning Signs Will Allow Us to Identify Would-Be Mass Killers Before They Act**

In the aftermath of an extremely violent episode, survivors typically question why certain warning signs were ignored. The warning sign can even come in the form of overt or veiled threats articulated by the soon-to-become mass murderer—a process that has been termed “leakage” (O'Toole, 2008). If anything, these indicators are yellow flags that only turn red once the blood has spilled and are identified in the aftermath of tragedy with crystal-clear hindsight.

There certainly exist a number of common features in the profile of a mass shooter. As shown in Table 1, they are overwhelmingly male (more than 95% are male), more often Caucasian (nearly two thirds are White), and older than murderers in general (half are more than 30 years of age). Beyond just these demographics, mass killers tend to share a number of psychological and behavioral characteristics, including depression, resentment, social isolation, the tendency to externalize blame, fascination with graphically violent entertainment, and a keen interest in weaponry (see Fox & Levin, 2003). However, these characteristics, even in combination, are fairly prevalent in the general population.

**Table 1.** Demographic Characteristics of Mass Shooters, 1976-2011.

Demographic characteristic	<i>n</i>	%
Offender sex		
Male	506	95.8
Female	22	4.2
Total	528	100.0
Offender race		
White	321	62.0
Black	171	33.0
Other	26	5.0
Total	518	100.0
Offender age		
Under 20	63	12.2
20-29	196	38.1
30-39	127	24.7
40-49	95	18.4
50 and above	34	6.6
Total	515	100.0

*Note.* The total count of 692 was reduced because of unknown offender characteristics.

Profiles and checklists designed to predict rare events—such as mass shootings—tend to over-predict, producing a large number of “false positives” (see Chaiken et al., 1994; Norko & Baranoski, 2008). Many people may closely match the profile—angry, frustrated folks who are reclusive, quick to blame others for their shortcomings and make threatening remarks—but very few will in fact commit murder, much less mass murder (see Bjelopera, Bagalman, Caldwell, Finklea, & McCallion, 2013; Ferguson, Coulson, & Barnett, 2011; Mulvey & Cauffman, 2001).

In addition, aggressive attempts to single out potential troublemakers before they make trouble can potentially do more harm than good by stigmatizing, marginalizing, and traumatizing already troubled individuals. If they already feel mistreated, then focused interventions, even if benevolent, can easily be misinterpreted as further evidence of persecution, thereby encouraging a violent outburst rather than discouraging it (see Fox & Levin, 1994, 2012; Lakeman, 1997).

### **Myth: Widening the Availability of Mental Health Services Will Allow Unstable Individuals to Get the Treatment They Need and Avert Mass Murders**

Recent mass shootings at the hands of seemingly disturbed individuals have prompted mental health advocates to push for increased access to treatment. Unfortunately, countless Americans suffer from depression and loneliness. Many go without the psychiatric treatment that they desperately need but perhaps cannot afford.

It would certainly be a fitting legacy to the tragedy in Newtown if mental health services were expanded and improved. However, greater access to treatment options may not necessarily reach the few individuals on the fringe who would seek to turn a school, a shopping mall, or a movie theater into their own personal war zone. With their tendency to externalize blame and consider themselves as victims of mistreatment, mass murderers see the problem to reside in others, not themselves (Knoll, 2012). If urged or even coerced to seek counseling, the would-be mass murderer would likely resist angrily to the suggestion that something is wrong with him or her. He or she desires fair treatment, not psychological treatment (see, for example, Fox & Levin, 1994).

In the aftermath of high-profile mass shootings, political leaders often rally to address the needs of the mentally ill. Unfortunately, this timing tends to stigmatize the vast majority of people who suffer from mental illness as if they too are mass murderers in waiting (see Barry, McGinty, Vernick, & Webster, 2013). However, no clear relationship between psychiatric diagnosis and mass murder has been established (see Busch & Cavanaugh, 1986; Dietz, 1986; Taylor & Gunn, 1999).

In addition, the sudden initiative to aid the psychologically impaired may be the right thing to do but for the wrong reason. For example, during an April 8, 2013, speech in Hartford, Connecticut, delivered months after the Sandy Hook school shooting, President Barack Obama (2013) urged Congress to respond: “We need to help people struggling with mental health problems get the treatment they need *before it is too late*” [italics added]. We should endeavor to help the mentally ill out of concern for their well-being, not just because we are worried about the well-being of those they might kill (Swanson, 2008).

## **Myth: Enhanced Background Checks Will Keep Dangerous Weapons Out of the Hands of These Madmen**

If one thing is predictable about mass shootings, it is that they will spark heated debate over gun control. Many public officials and private citizens alike insist that we must find a way to keep guns away from our most dangerous element (see Barry et al., 2013; Best, 2013). However, they are often blinded by passion and anger from confronting the practical limitations to achieving that desirable objective.

Most mass murderers do not have criminal records or a history of psychiatric hospitalization (Dietz, 1986). They would not be disqualified from purchasing their weapons legally. A recent examination of 93 mass shootings from January 2009 through September 2013, conducted by Mayors Against Illegal Guns (2013), found no indication that any of the assailants were prohibited by federal law from possessing firearms because they had been adjudicated mentally ill or had been involuntarily committed for treatment. And in just 10 of the 93 cases, there was evidence that concerns about the mental health of the shooter had been brought to the attention of a medical practitioner or legal authority prior to the shooting spree.

People cannot be denied their Second Amendment rights just because they look strange or act in an odd manner. Moreover, would-be mass killers can usually find an alternative

**Table 2.** Mass Shootings and the Federal Assault Weapon Ban.

Time period	Incidents		Victims	
	Total	Average	Total	Average
1976-1994	335	17.6	1,536	80.8
1995-2004	193	19.3	876	87.6
2005-2011	144	20.6	699	99.9

Source. Supplementary Homicide Reports, 1976-2011.

**Table 3.** Weapons Used in Public Mass Shootings.

Type of firearm	<i>n</i>	%
Assault weapons	35	24.6
Semiautomatic handguns	68	47.9
Revolvers	20	14.1
Shotguns	19	13.4
Total	142	100.0

Source. Mother Jones database of mass shootings, 1982-2012.

way of securing the needed weaponry. Several mass shooters have used firearms purchased, borrowed, or stolen from a family member or friend (see Follman et al., 2013).

## Myth: Restoring the Federal Ban on Assault Weapons Will Prevent These Horrible Crimes

In the aftermath of the Newtown shooting, many media pundits and political leaders alike decried the expiration of the 1994 federal ban on certain military-style assault weapons. However, a comparison of the incidence of mass shootings during the 10-year window when the assault weapon ban was in force against the time periods before implementation and after expiration shows that the legislation had virtually no effect, at least in terms of murder in an extreme form. As shown in Table 2, based on SHR data from 1976 to 2011, the average incidence and victimization level during the federal prohibition was not especially different than in the years before or after the law was operative.

The overwhelming majority of mass murderers use firearms that would not be restricted by an assault weapons ban (see Duwe, 2007). Moreover, the Mother Jones data, notwithstanding the questions surrounding inclusions/exclusions, suggest that assault weapons are not as commonplace in mass shootings as some gun-control advocates believe. As shown in Table 3, semiautomatic handguns are far more prevalent in random massacres than firearms that would typically be classified as assault weapons (Follman et al., 2013). In fact, only one quarter of these mass murderers killed with an assault weapon; they easily could have identified an alternate means of mass casualty if that were necessary.

In an analysis of mass shootings from January 2009 through September 2013, Mayors Against Illegal Guns (2013) confirmed the limited role of military-style assault weapons. Only 14 of the 93 incidents examined by this gun-control group involved assault weapons or high-capacity magazines. Of course, limiting the size of ammunition clips would at least compel a gunman to pause to reload or switch weapons, potentially giving others a brief window of opportunity to escape or even intervene (see Barry et al., 2013; Best, 2013). However, such an initiative would likely affect only newly produced accessories. Unfortunately, there is an ample supply of large-capacity magazines already in circulation for anyone determined enough to locate one.

### **Myth: Expanding “Right to Carry” Provisions Will Deter Mass Killers or at Least Stop Them in Their Tracks and Reduce the Body Counts**

The potential for citizens to counterattack while an assailant stops to reload is but one reason why many gun-rights advocates argue against gun restrictions, at least for law-abiding, licensed gun owners. Specifically, many argue that the establishment of gun-free zones (e.g., schools, churches, courthouses, and other government buildings) makes citizens vulnerable to attacks by armed assailants.

Proponents for expanding concealed carry rights contend that having more people armed in public spaces would not only serve as a deterrent but also permit citizens to overpower an armed assailant. Whatever the deterrent or intervention effects, detractors have voiced concern that a sudden shootout between an assailant and citizens armed with concealed weapons could potentially catch countless innocent victims in the crossfire. As mentioned, mass killers are often described by surviving witnesses as being relaxed and calm during their rampages, owing to their level of planning. In contrast, the rest of us are taken by surprise and typically respond frantically.

Whether or not permitting concealed carry impacts the risk of mass murder is, of course, an empirical question, and not just a debate involving hypotheticals. Using a Poisson regression approach, Lott and Landes (2000) analyzed the effect of right-to-carry laws in 23 states on the incidence and magnitude of multiple-victim homicide over the time frame of 1977-1995, concluding that such legislation works to suppress the risk and extent of mass violence. However, Duwe, Kovandzic, and Moody (2002), applying the more flexible and appropriate negative binomial model to a time frame expanded through 1999, concluded that the effect of right-to-carry laws was negligible, neither encouraging nor discouraging mass shootings.

The debate over an armed citizenry has focused specifically on schools and the need to protect vulnerable populations of students from armed assailants. Since the Newtown shooting, lawmakers in as many as six states have promoted legislation to arm school-teachers and train them to shoot. And, based on a nationwide poll by the Gallup organization, nearly two thirds of Americans see merit in this idea (Newport, 2012).

Supporters of firearms-for-faculty laws argue that ever since the early 1990s, when the U.S. Congress established schools as gun-free zones, an armed assailant, be it a student-insider or a stranger-intruder, could be assured to face little opposition. The belief

is that arming teachers and administrators might serve as a powerful deterrent to anyone contemplating a Columbine-style school shooting. It is hard to imagine, however, that a vengeful student, who is willing to die by police gunfire or by his or her own hand, would be dissuaded by knowing that the faculty were armed. He may even welcome the chance to shoot it out with the principal at high noon in the school cafeteria.

The debate over guns on campus has been particularly contentious with regard to institutions of higher education. The national grassroots organization Students for Concealed Carry has had some success in convincing legislators that the body count in episodes such as the Virginia Tech massacre, in which 32 people were slain, would be reduced were properly licensed and trained students allowed to carry guns to class. However, in light of the low rate of serious violence on campus and the high prevalence of substance abuse and depression among college students, it would seem ill-advised to encourage gun carrying by anyone other than duly sworn public safety personnel.

### **Myth: Increasing Physical Security in Schools and Other Places Will Prevent Mass Murder**

The immediate response to deadly shootings in schools and other buildings is typically a call for enhanced physical security (see Lassiter & Perry, 2009; Trump, 2011). In the short term, access control and close surveillance may calm the fears of an anxious public. In the long run, it is equally important to avoid transforming our public spaces into fortresses.

Out of concern for the safety of the most vulnerable members of society, schools at all levels have seen the need to invest significant resources in physical security measures. As shown in Table 4, public schools have particularly embraced access control strategies as well as surveillance technology. Despite the tremendous suffering that would come from a school shooting, the exceptionally low probability of such an event would argue against excessive levels of security (Fox & Burstein, 2010). Children should not be constantly reminded of their vulnerability, suggesting that they have a target on their backs. It hardly serves the primary mission of educating students.

Although generally effective in protecting a student population, most security measures serve only as a minor inconvenience for those who are determined to cause mayhem (see Fox & Burstein, 2010; Rocque, 2012; Trump, 2000). Two middle school students in Arkansas, for example, didn't bother trying to bring guns into school. They only had to pull the fire alarm and wait outside in the schoolyard for their human targets to emerge from the building.

### **Myth: Having Armed Guards at Every School Will Serve to Protect Students From an Active Shooter and Provide a Deterrent as Well**

In the wake of the Sandy Hook massacre, Wayne LaPierre, Executive Director of the National Rifle Association (NRA), suggested that we equip every school in America—schools of every size, level, and type—with an armed guard. Central to the set of



**Table 4.** Percentage of Public Schools With Various Safety and Security Measures.

School safety and security measure	School year				
	1999-2000	2003-2004	2005-2006	2007-2008	2009-2010
Controlled access during school hours					
Buildings (e.g., locked or monitored doors)	74.6	83.0	84.9	89.5	91.7
Grounds (e.g., locked or monitored gates)	33.7	36.2	41.1	42.6	46.0
Closed the campus for most students	64.6	66.0	66.1	65.0	66.9
Required to wear badges or picture IDs					
Students	3.9	6.4	6.1	7.6	6.9
Faculty and staff	25.4	48.0	47.8	58.3	62.9
Metal detector checks on students					
Random checks	7.2	5.6	4.9	5.3	5.2
Required to pass through daily	0.9	1.1	1.1	1.3	1.4
Sweeps and technology					
Random sweeps for contraband	11.8	12.8	13.1	11.4	12.1
Provided telephones in most classrooms	44.6	60.8	66.8	71.6	74.0
Notification system for school-wide emergency	NA	NA	NA	43.2	63.1
Anonymous threat reporting system	NA	NA	NA	31.2	35.9
Used security cameras to monitor the school	19.4	36.0	42.8	55.0	61.1
Visitor requirements					
Sign in or check in	96.6	98.3	97.6	98.7	99.3
Dress code					
Required students to wear uniforms	11.8	13.8	13.8	17.5	18.9
Enforced a strict dress code	47.4	55.1	55.3	54.8	56.9
School supplies and equipment					
No book bags or clear-only ones	5.9	6.2	6.4	6.0	5.5
Provided school lockers to students	46.5	49.5	50.6	48.9	52.1

Source. U.S. Department of Education, National Center for Education Statistics, School Survey on Crime and Safety 2000, 2004, 2006, 2008, and 2010.



**Table 5.** Percentage of Public Schools With Security Personnel.

School characteristics	% of schools with security guards or sworn police officers			% of schools with regularly armed security personnel		
	2005-2006	2007-2008	2009-2010	2005-2006	2007-2008	2009-2010
All public schools	41.7	46.3	42.8	30.7	34.1	28.0
Grade level						
Primary school	26.2	33.1	27.7	15.7	20.1	12.5
Middle school	63.7	65.5	66.4	51.8	54.2	51.0
High school	75.2	79.6	76.4	64.0	67.5	63.3
Combined school	43.5	39.9	36.6	32.4	32.1	24.6
Enrollment size						
Less than 300	22.7	27.6	25.6	16.2	16.1	13.5
300-499	29.8	36.1	33.5	20.5	26.7	19.8
500-999	50.5	52.7	47.3	36.9	39.5	30.3
1,000 or more	86.9	90.6	90.0	70.3	73.5	74.6
Locale						
City	49.1	57.3	50.9	30.5	33.1	27.6
Suburb	42.7	45.4	45.4	32.2	33.7	29.6
Town	44.4	51.1	39.0	38.1	45.0	31.6
Rural	33.8	36.0	35.2	27.1	30.5	25.3
Percent minority enrollment						
Below 5%	28.3	35.6	30.4	22.9	27.1	21.9
5% up to 20%	38.9	42.9	36.5	30.2	37.7	27.6
20% up to 50%	41.6	44.7	41.9	35.3	38.4	30.5
50% and above	51.3	55.4	52.5	31.3	31.8	29.1

Source. U.S. Department of Education, National Center for Education Statistics, 2005-2006, 2007-2008, and 2009-2010 School Survey on Crime and Safety (SSOCS), 2006, 2008, and 2010.

recommendations advanced by an NRA-sponsored task force is for schools to be sufficiently prepared to ward off any dangerous intruder (see Hutchinson, 2013).

Actually, as shown in Table 5, many schools, especially high schools and those in urban areas, already use security personnel, often equipped with firearms. Notwithstanding the many benefits to employing well-trained school resource officers (Rich-Shea, 2010) as a deterrent to mass shootings, this too is limited. Columbine High School, in fact, had school resource officers on duty the day in 1999 when two alienated adolescents turned their school into a war zone. Columbine was a fairly large campus with nearly 2,000 students enrolled, and the officers couldn't be everywhere at once.

If armed guards and armed teachers are indeed worthy strategies for protecting children, then what should schools do to protect the students before and after school? Expanding this approach would dictate providing weapons to coaches, athletic directors, and even bus drivers.

## Conclusion

The fact that gun control, expanded psychiatric services, and increased security measures are limited in their ability to prevent dreadful mass shootings doesn't mean that we shouldn't try. In the immediate aftermath of the Newtown shooting, there was momentum in Washington, D.C., and in various state legislatures to establish policies and procedures designed to make us all safer.

Gun restrictions and other initiatives may not stop the next mass murderer, wherever he or she may strike, but we can enhance the well-being of millions of Americans in the process. Besides, doing something is better than doing nothing. At least, it will reduce the debilitating feeling of helplessness.

Many of the well-intentioned proposals coming in response to the recent spike in mass shootings may do much to affect the level of violent crime that plagues our nation daily. We shouldn't, however, expect such efforts to take a big bite out of crime in its most extreme form. Of course, taking a nibble out of the risk of mass murder, however small, would still be a worthy goal for the nation. However, those who have suggested that their plan for change will ensure that a crime such as the Sandy Hook massacre will never reoccur will be bitterly disappointed.

Eliminating the risk of mass murder would involve extreme steps that we are unable or unwilling to take—abolishing the Second Amendment, achieving full employment, restoring our sense of community, and rounding up anyone who looks or acts at all suspicious. Mass murder just may be a price we must pay for living in a society where personal freedom is so highly valued.

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# EXHIBIT 109





[Home](#)   [Offenses Known to Law Enforcement](#)   [Violent Crime](#)   [Property Crime](#)   [Clearances](#)   [Persons Arrested](#)   [Police Employee Data](#)

**Murder Victims**  
by Weapon, 2014–2018

Download Excel					
Weapons	2014	2015	2016	2017	2018
Total	12,278	13,780	15,318	15,195	14,123
Total firearms:	7,803	9,103	10,372	11,006	10,265
Handguns	5,342	6,176	6,762	7,051	6,603
Rifles	235	215	300	390	297
Shotguns	238	247	247	264	235
Other guns	88	151	172	180	167
Firearms, type not stated	1,900	2,314	2,891	3,121	2,963
Knives or cutting instruments	1,545	1,525	1,558	1,609	1,515
Blunt objects (clubs, hammers, etc.)	431	436	464	472	443
Personal weapons (hands, fists, feet, etc.) <sup>1</sup>	668	647	664	710	672
Poison	9	8	12	15	5
Explosives	6	1	1	0	4
Fire	55	63	78	96	72
Narcotics	70	69	118	110	78
Drowning	12	12	9	8	9
Strangulation	84	96	97	89	70
Asphyxiation	93	105	92	111	90
Other weapons or weapons not stated	1,502	1,715	1,853	969	900

- <sup>1</sup> Pushed is included in personal weapons.
- NOTE: The Uniform Crime Reporting Technical Refresh enables updating of prior years' crime data; therefore, data presented in this table may not match previously published data.

Most Wanted	News	What We Investigate	Services	Additional Resources
Ten Most Wanted	Stories	Terrorism	CJIS	Accessibility
Fugitives	Videos	Counterintelligence	CIRG	eRulemaking
Terrorism	Press Release	Cyber Crime	Laboratory Services	Freedom of Information / Privacy Act
Kidnappings / Missing Persons	Speeches	Public Corruption	Training Academy	Legal Notices
Seeking Information	Testimony	Civil Rights	Operational Technology	Legal Policies & Disclaimers
Bank Robbers	Podcasts and Radio	Organized Crime	Information Management	Privacy Policy
ECAP	Photos	White-Collar Crime		USA.gov
VICAP	Español	Violent Crime	FBI Jobs	White House
	Apps	WMD	Submit a Tip	No FEAR Act
About			Crime Statistics	Equal Opportunity
Mission & Priorities	Resources	Contact Us	History	
Leadership & Structure	Law Enforcement	Field Offices	FOIPA	
Partnerships	Businesses	FBI Headquarters	Scams & Safety	
Community Outreach	Victim Assistance	Overseas Offices	FBI Kids	
FAQs	Reports & Publications		FBI Tour	



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# EXHIBIT 110

# Chicago's Most Popular Crime Guns — A Visual Analysis

 [thetrace.org/2016/01/chicago-crime-guns-chart](http://thetrace.org/2016/01/chicago-crime-guns-chart)

January 7, 2016

Chicago

## Chicago Criminals' Favorite Gunmakers: A Visual Ranking

Police data reveals that drug money is helping the city's gang members buy more firepower, while decades-old 'Saturday Night Specials' continue to claim victims.

By Sarah Kollmorgen

Jan 6, 2016



The Trace

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By early December of last year, the Chicago Police Department had confiscated 6,521 illegal guns in 2015. That total meant the department was seizing about 19 guns a day — or about one gun every 74 minutes. For the city's police department, the remarkable haul wasn't

unusual. In 2014, it recovered 6,429. In 2013, it seized 6,815.

Indeed, officers in Chicago recover more guns than their counterparts in New York and Los Angeles — two cities with larger populations — combined. In 2012, Los Angeles police seized 122 illegal guns for every 100,000 residents, while New York cops confiscated 39. In Chicago, the rate was 277.

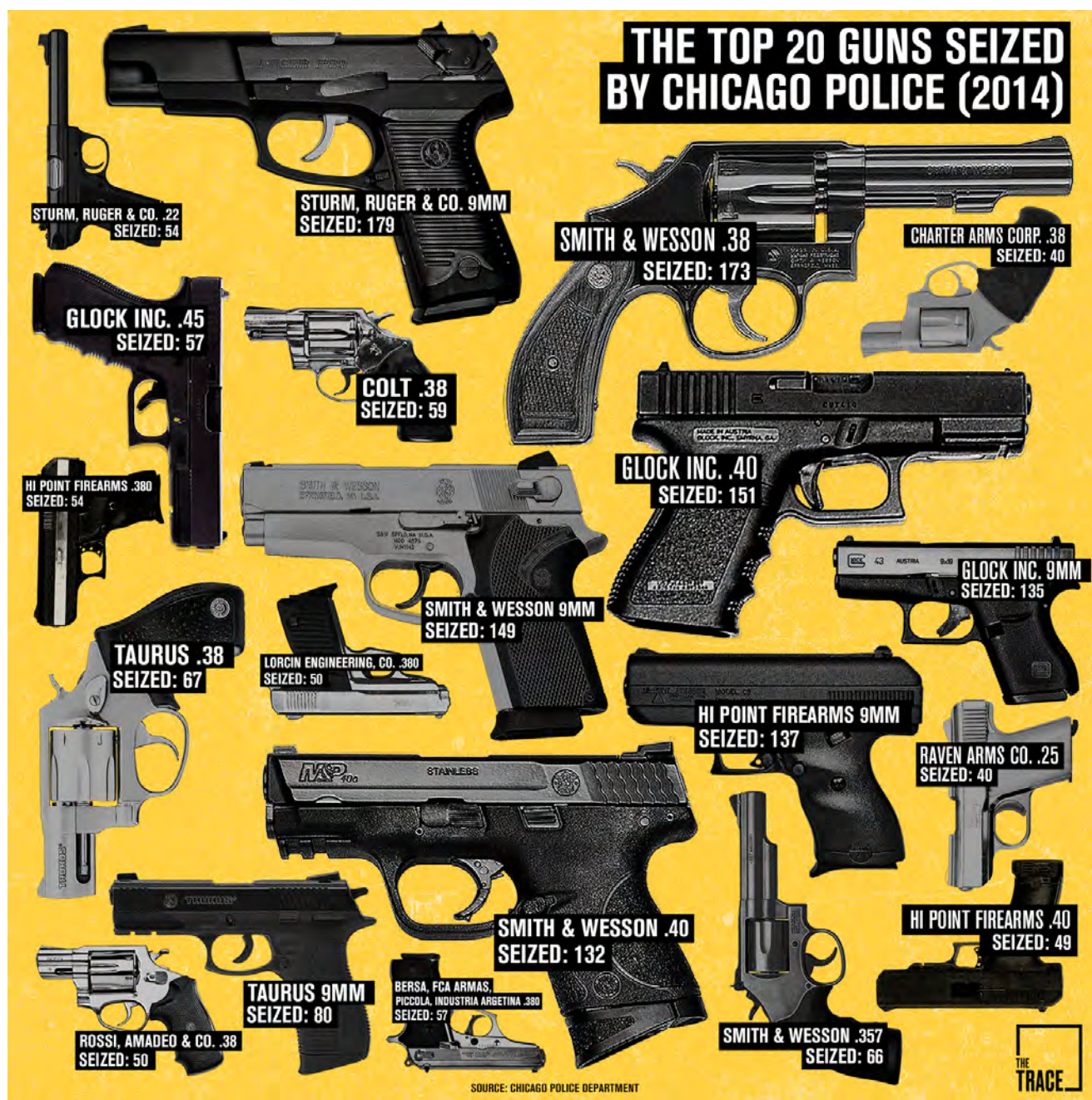
Despite having some of the toughest gun regulations of any city in the country, Chicago continues to record thousands of shootings per year. As President Obama has pointed out, that isn't a failing of the city's gun laws. The problem is that most of the guns used in crimes in Chicago come from neighboring states with lax gun laws. A study released last year by the city found that almost 60 percent of firearms recovered at Chicago crime scenes were first bought in states that do not require background checks for Internet or gun show sales, like neighboring Indiana and Wisconsin. Of the remaining crime guns, nearly half were purchased at three gun shops just outside the city.

Research by the Chicago police and the Bureau of Alcohol, Tobacco, Firearms, and Explosives paints a detailed picture of how crime guns flow into the city. But less has been known about what kinds of firearms, specifically, are favored by the city's criminals. In an effort to learn more, The Trace filed an information request with the CPD's Research and Development Division, asking for the make, model, and caliber of all the crime guns collected in Chicago in 2014.

The CPD data includes guns used in violent crimes and murders, as well as guns confiscated during traffic stops. For our analysis, we excluded the 17 firearms collected by airport law enforcement, since those might not have involved illegal possession. The total also eliminates guns associated with a suicide or firearms turned into police through gun buybacks or other means. Guns turned in by the public accounted for more than 2,000 of the firearms recovered in 2014. In all, the CPD inventoried 4,505 guns in 2014 that were associated with criminal incidents — or events in which an officer determined that a crime had taken place.

Narrowing the focus to groupings of guns by manufacturer and caliber produces the following popularity index of Chicago crime guns:





(illustration: Joel Arbaje for The Trace)

From that hierarchy, a few patterns emerge. The city's criminals, for instance, prefer semiautomatic pistols to revolvers and generally seek out cheap junk guns. What's also notable is the type of gun that doesn't appear among the top models seized. In 2014, Chicago police recovered only three assault weapons associated with criminal incidents. "Often there's a misimpression about the importance of assault guns and assault weapons, and it's important to point out how rare that is," says Phillip Cook, an economist at Duke University who studies underground gun markets. "The guns being used in Chicago for crime and murder are by and large very ordinary pistols."

### Smith & Wesson: Chicago's top crime gun manufacturer

In 2000, Smith & Wesson struck a “historic” deal with the Clinton Administration, agreeing to a stringent set of safety and distribution standards. For instance, the company would sell its products only to dealers who took steps to restrict the sale of guns to criminals. The agreement reportedly helped settle several civil suits brought against Smith & Wesson by state and federal agencies.

But the deal put the company in dire straits. An apoplectic National Rifle Association called for a boycott, and the company’s sales declined by up to 60% before the end of 2000 compared to 1999. Its British owner was forced to sell the company, but it quickly regained its footing, thank in part to the Bush Administration — which declined to enforce the Clinton-era deal and awarded Smith & Wesson several federal contracts.

Nearly two decades after its rocky safety initiative, Smith & Wesson is Chicago’s leading producer of crime guns. The company holds four spots among the 20 guns most frequently recovered by police — more than any other brand — and is the most popular manufacturer overall, with 624 total guns seized in 2014. It’s worth pointing out that Smith & Wesson is the country’s largest firearm manufacturer, which may account for the prevalence of its products among the city’s crime guns.

Meanwhile, the company has again come under government scrutiny. Last month, New York City’s public advocate filed a letter saying the Securities and Exchange Commission should investigate whether Smith & Wesson misrepresented or omitted information about how often its firearms are used in crimes. (Smith & Wesson could not be reached for comment.)

## **9MM handguns are the new crime gun of choice**

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Between 80 to 85 percent of the city’s homicides are committed with a gun. Of those murders, a “preponderance” are carried out by gang members, according to a 2015 report co-authored by Duke’s Phillip Cook.



Friends comfort each other at a Chicago memorial service for a gun violence victim in 2014. (Getty Images/Scott Olson)

The weapons of choice for gangs today are 9MM semiautomatic handguns, followed by .40 caliber and .45 caliber semiautomatics, says Thomas Ahern, an ATF senior agent based in Chicago. It makes sense then that those calibers account for about half of the crime guns recovered by police.

Until the 1980s, .38-caliber revolvers were the most popular crime guns, according to Cook. These revolvers were more reliable and cheaper than semiautomatic pistols of the era. But that changed as manufacturers began producing semiautomatics that were just as efficient and affordable as revolvers. What makes semiautomatics particularly appealing to gang members is that they generally have a higher capacity than revolvers, meaning they can fire more shots before it's necessary to reload.

### **Drug money is allowing gang members to buy better guns**

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Glock is one of the most name-dropped brands in Jay-Z's lyrics, and the Austrian firearm manufacturer has received prominent shout-outs from Wu-Tang Clan and 50 Cent, among other hip-hop artists. If you assume the references to be instances of art following illegal commerce, you might imagine that Glocks are practically littering inner-city streets. But that's



not the case. Given their high cost — the retail price for a Glock .45 or 9MM runs between \$515 to \$595 at one Chicago-area dealer — Glocks have typically remained out of reach for most gang members and the straw purchasers who often supply them.

“A lot of gang members and criminals are settling for what they can get their hands on and afford,” says Duke’s Phillip Cook. But just because gang members can’t afford a Glock, that doesn’t mean they don’t want one. “Glock would probably be the weapon of choice for most of the gangs,” says the ATF’s Thomas Ahern. “They view Glocks as top of the line.”

In recent years, Ahern says he has seen a shift in the quality of guns used by Chicago gangs. Gangs usually purchase cheap guns and dispose of them once they’ve been used in a crime, so they can avoid getting caught with the weapon down the line. But Ahern has noticed that an influx of cash from the narcotics trade has allowed some gang members to purchase higher-quality guns like Glocks, which they generally hold onto.

### **Hi-Points are dangerously cheap**

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Hi-Point Firearms, based in Mansfield, Ohio, produces low-cost semiautomatic handguns and carbines. The three Hi-Point models among Chicago’s top crime guns are also among the cheapest by retail value, with prices ranging from \$162 to \$285. The company’s focus on the affordability of its products has drawn the gunmaker unwanted attention. In 2005, Beemiller Inc., Hi-Point’s parent company, and MKS Supply, the company’s sole distributor, were sued for negligence. The suit alleges that Beemiller and MKS intentionally supplied handguns to irresponsible dealers, because they stood to profit from sales to criminals.

The case, Williams v. Beemiller, was brought by the Brady Center to Prevent Gun Violence on behalf of Daniel Williams, a 17-year-old who was mistaken for a gang member in New York and shot playing basketball. The Brady Center alleges the 9mm Hi-Point used to shoot Williams was purchased at a gun show along with 86 other guns in a single sale to an obvious straw purchaser. The defendants each moved to dismiss the suit under the Protection of the Lawful Commerce in Arms Act, which shields gun manufacturers and dealers from negligence suits, but after a judge tossed the case out, an appeals court reinstated the lawsuit. Hi-Point attorney Scott Allan disagreed with the ruling, telling the Associated Press that Hi-Point did not violate any statute. The case remains in New York court.



Chicago police display some of the thousands of firearms the department seized in 2014. (AP Photo/M. Spencer Green)

### **A popular South American gunmaker has cracked the U.S. criminal market**

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In the 1990s, Bersa became the official firearms supplier for Argentina's armed forces and federal police. Since then, the manufacturer, which focuses on producing accurate handguns at reasonable prices, has grown increasingly popular in Central and South America. The company's presence among Chicago's top crime guns would seem to indicate that these guns are beginning to draw more attention in the U.S.

### **The "Saturday Night Special" is still kicking**

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In the 1980s, a group of gun manufacturers set up shop outside Los Angeles, California. These companies, which included Raven Arms and Lorcin Engineering, were collectively dubbed the "Ring of Fire," as they became notorious for producing simple, cheap handguns commonly known as "Saturday Night Specials." Even though these junk guns had a tendency to misfire or malfunction, production by Ring of Fire companies grew exponentially, and by 1990, they churned out one-third of all handguns in the U.S. A trace report by the ATF in the 1990s found that Saturday Night Specials like the ones produced by Raven and Lorcin were 3.4 times more likely to be used in crimes than other guns.



Though both companies have been out of business for decades, the appearance of the Lorcin .380 and Raven .25 among Chicago's most seized guns speaks to the enduring appeal of the Saturday Night Special. Harold Pollack, co-director of the University of Chicago Crime Lab, says that many black market gun customers are looking for a weapon that even the least skilled person can operate. These firearms fit the bill.

Older guns are also easier to buy for cheap on the black market, adding to their attraction, especially for younger gang members. Cook's research has shown that crime guns purchased by gang members tend to be an average of 12.6 years old.

Guns are durable goods, and once a lax law or untoward seller allows a gun to enter the black market, it will often stay in circulation for decades. "A gun manufactured in 1984 will kill you just as dead as a new one," says Pollack.

*[Top photo: AP Photo/M. Spencer Green]*

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# EXHIBIT 111



# Mass Murder with Firearms: Incidents and Victims, 1999-2013

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## Summary

In the wake of tragedy in Newtown CT, Congress defined “mass killings” as “3 or more killings in a single incident” (P.L. 112-265). Any consideration of new or existing gun laws that follows mass shootings is likely to generate requests for comprehensive data on the prevalence and deadliness of these incidents. Despite the pathos of mass shootings, only a handful of researchers and journalists have analyzed the principal source of homicide data in the United States—the Supplementary Homicide Reports (SHR) compiled by the Federal Bureau of Investigation (FBI)—to determine whether those incidents have become more prevalent and deadly.

According to the FBI, the term “mass murder” has been defined generally as a multiple homicide incident in which four or more victims are murdered, within one event, and in one or more locations in close geographical proximity. Based on this definition, for the purposes of this report, “mass shooting” is defined as a multiple homicide incident in which four or more victims are murdered with firearms, within one event, and in one or more locations in close proximity. Similarly, a “mass public shooting” is defined to mean a multiple homicide incident in which four or more victims are murdered with firearms, within one event, in at least one or more public locations, such as, a workplace, school, restaurant, house of worship, neighborhood, or other public setting.

This report analyzes mass shootings for a 15-year period (1999-2013). CRS analysis of the FBI SHR dataset and other research indicates that offenders committed at least 317 mass shootings, murdered 1,554 victims, and nonfatally wounded another 441 victims entirely with firearms during that 15-year period. The prevalence of mass shooting incidents and victim counts fluctuated sporadically from year to year. For the period 2007-2013, the annual averages for both incidents and victim counts were slightly higher than the years from 1999-2007.

With data provided by criminologist Grant Duwe, CRS also compiled a 44-year (1970-2013) dataset of firearms-related mass murders that could arguably be characterized as “mass public shootings.” These data show that there were on average:

- one (1.1) incident per year during the 1970s (5.5 victims murdered, 2.0 wounded per incident),
- nearly three (2.7) incidents per year during the 1980s (6.1 victims murdered, 5.3 wounded per incident),
- four (4.0) incidents per year during the 1990s (5.6 victims murdered, 5.5 wounded per incident),
- four (4.1) incidents per year during the 2000s (6.4 victims murdered, 4.0 wounded per incident), and
- four (4.5) incidents per year from 2010 through 2013 (7.4 victims murdered, 6.3 wounded per incident).

These decade-long averages suggest that the prevalence, if not the deadliness, of “mass public shootings” increased in the 1970s and 1980s, and continued to increase, but not as steeply, during the 1990s, 2000s, and first four years of the 2010s.

Mass shootings are arguably one of the worst manifestations of gun violence. As discussed in this report, statute, media outlets, gun control and rights advocates, law enforcement agencies, and

researchers often adopt different definitions of “mass killing,” “mass murder,” and “mass shooting,” contributing to a welter of claims and counter-claims about the prevalence and deadliness of mass shootings. With improved data, policymakers would arguably have additional vantage points from which to assess the legislative proposals that are inevitably made in the wake of these tragedies.

Toward these ends, Congress could consider directing one or several federal agencies, including but not limited to the FBI and BJS, to improve collection of data on multiple-victim homicides. Congress could also direct federal agencies, possibly the Bureau of Alcohol, Tobacco, Firearms and Explosives, to report annually on firearms-related mass murders, including data on (1) offender acquisition of firearms, (2) types of firearms used, (3) amounts and types of ammunition carried and shots fired, (4) killed and wounded counts, (5) offender histories of mental illness and domestic violence, and (6) victim-offender relationships.

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## Introduction

Mass murders committed with firearms—particularly those incidents that occur in workplaces, schools, restaurants, houses of worship, and other public spaces—cause people to feel anxious and vulnerable,<sup>1</sup> as the recent Charleston, SC,<sup>2</sup> and Chattanooga, TN,<sup>3</sup> tragedies demonstrate. Several such mass murders in 2012, seven incidents by most counts, compounded a fear among many people that “this could happen to me.”<sup>4</sup> This rash of shootings prompted media outlets, gun control advocacy groups, and law enforcement agencies to question whether such incidents were becoming more prevalent and deadly,<sup>5</sup> or had possibly reached “epidemic” proportions.<sup>6</sup> Toward those ends, some of these groups amassed compilations of multiple victim homicides, but their methodologies often differed substantially, and their focus and findings were sometimes quite different.<sup>7</sup> A handful of researchers who have studied mass murder have utilized official crime data to compile comprehensive datasets of multiple victim homicides and mass murders.<sup>8</sup> The

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<sup>1</sup> According to one nationwide survey of adults, Americans’ top fears include (1) walking alone at night, (2) becoming the victim of identity theft, (3) various risks of using the Internet, (4) being the victim of a mass/random shooting, and (5) public speaking. See Jerry Lange, “When Fear Outweighs Reality,” *Seattle Times*, October 23, 2014.

<sup>2</sup> On June 17, 2015, a lone white offender entered the Emanuel African Methodist Episcopal Church in Charleston, SC, and murdered nine Black parishioners with a handgun, reportedly a .45 caliber semiautomatic pistol. He carried eight detachable magazines, with which he reloaded several times. The alleged offender is 21 years old. He has been indicted federally under hate crime statutes. Mark Berman, “Roof Indicted on Federal Hate-Crime Charges,” *Washington Post*, July 23, 2015, p. A3. Jeremy Borden, Sari Horwitz, and Jerry Markon, “Man Arrested in Charleston Killings: The Suspect, A Young Life That Had Quietly Drifted Off Track,” *Washington Post*, June 19, 2015, p. A1, A12.

<sup>3</sup> On July 16, 2015, a lone offender fired more than 50 shots into a U.S. Armed Forces recruiting center in Chattanooga, TN. He then drove to a U.S. Navy Operational Support Center and shot to death four Marines and fatally wounded a Sailor. He also nonfatally wounded another Marine and a police officer. The offender was 24-years old. He was armed with an AK-74. Police recovered a Saiga 12-gauge pistol grip shotgun from his rental car. He was reportedly shot to death by police, who were attempting stop and arrest him. Police recovered two other pistols that were privately owned and possibly carried by two of the Marines. It is possible that the Marines exchanged fire with the offender, but it is unclear whether they hit the offender and preliminary reports have ruled out any friendly fire casualties among the victims. According to the Federal Bureau of Investigation, the incident is being investigated as a case of “home-grown violent extremism.” Adam Goldman, “Gunman Worked Methodically, FBI Says of Attack,” *Washington Post*, July 23, 2015, p. A3. Thomas Gibbons Neff and Adam Goldman, “Marine Slain in Tenn. May Have Returned Fire,” *Washington Post*, July 21, 2015, p. A02.

<sup>4</sup> Grant Duwe quoted by Charles Lewis, “Mass Public Killing Under 1% of All Murders; More Media Coverage,” *National Post* (formerly known as *The Financial Post*) (Canada), July 21, 2012, p. A4.

<sup>5</sup> Mark Follman, Gavin Aronsen, and Deanna Pan, “A Guide to Mass Shootings in America,” *Mother Jones*, July 20, 2012, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>. Hereinafter cited as “A Guide to Mass Shootings in America,” *Mother Jones*. It is noteworthy that Mayors Against Illegal Guns (MAIG; today, Everytown for Gun Safety) released a mass shootings dataset of its own, which included family mass murders/shootings that occurred in both public and private locations. Brad Plumer, “Study: The U.S. Has Had One Mass Shooting per Month Since 2009,” *Washington Post*, February 2, 2013.

<sup>6</sup> Mark Follman, “America Is Facing a Mass-Shooting Epidemic,” *The Chronicle* (Willimantic, CT), Oct. 27, 2014, p. 05. Also, see Megan McArdle, “Department of Awful Statistics: Are Mass Shootings Really on the Rise?,” *Daily Beast*, January 28, 2013, <http://www.thedailybeast.com/articles/2013/01/28/departments-of-awful-statistics-are-mass-shootings-really-on-the-rise.html>.

<sup>7</sup> Lin Huff-Corzine, James C. McCutcheon, Jay Corzine, John P. Jarvis, Melissa J. Tetzlaff-Bemiller, Mindy Weller, and Matt Landon, “Shooting for Accuracy: Comparing Data Sources on Mass Murder,” *Homicide Studies*, vol. 18(1), 2014, p. 106.

<sup>8</sup> *Ibid.*



analysis in this report builds upon the latter work and scholarship,<sup>9</sup> as well as the compilations described above.

### Key Takeaways of This Report

- For 15 years (1999-2013), the United States has seen about 31 mass murders per year on average that resulted in four or more persons being murdered in a single incident. Of those incidents, CRS has confirmed that 21 per year on average were committed entirely with firearms.
- Of those mass murders with firearms, 4.4 per year on average were mass public shootings that occurred in one or more public locations, such as a workplace, school, restaurant, house of worship, neighborhood, or other public setting.
- For the same 15 years, the United States has seen about 8.5 familicide mass shootings per year on average, in which offenders typically murdered their domestic partners and children in private residences or secluded, sparsely populated settings, and 8.3 other felony mass shootings per year on average, in which offenders committed murders as part of some other underlying criminal activity (robbery, insurance fraud, or criminal competition) or commonplace circumstance (argument).
- Since the 2012 Newtown, CT, tragedy, the national dialogue on gun violence has been focused on mass public shootings, partly due to several such shootings in recent years (2007, 2009, and 2012) that resulted in double-digit victim counts.
- Based on five-year annual averages, the United States saw an uptick in the prevalence and deadliness of mass public shootings for the last five years (2009-2013). However, those increases were largely driven by a few incidents in 2012. If 2012 were excluded, the averages would actually have been lower than the preceding five-year period (2004-2008).
- For 44 years (1970-2013), the prevalence of mass public shootings has increased: 1.1 incidents per year on average in the 1970s, 2.7 in the 1980s, 4.0 in the 1990s, 4.1 in the 2000s, and 4.5 in the first four years of the 2010s.
- Generalizations about offenders who commit mass *public* shootings are often carried over and applied to other offenders, who commit mass shootings under different circumstances. The three broad patterns of firearms-related mass murders identified in this report—public, familicide, and other felony—present different, but sometimes overlapping, sets of issues and challenges.

What is “mass murder” with firearms? According to the Federal Bureau of Investigation (FBI) criminal profilers, the term “mass murder” has been defined generally as a multiple homicide incident in which four or more victims are murdered—not including the offender(s)—within one event, and in one or more geographical locations relatively near one another.<sup>10</sup> It follows then that a “mass shooting” could be defined as a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and in one or more locations relatively near one another. Similarly, a “mass public shooting” could be, and has been,

<sup>9</sup> James Alan Fox and Jack Levin, *Extreme Killing: Understanding Serial and Mass Murder*, 3<sup>rd</sup> ed., Sage Publications, Inc. 2014, 344 pp. Hereinafter cited as “Fox and Levin, *Extreme Killing*, 201””; Grant Duwe, *Mass Murder in the United States: A History*, McFarland 2007, p. 27. Hereinafter cited as Grant Duwe, *Mass Murder in the United States: A History*, 2007; and U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Homicide in the U.S. Known to Law Enforcement*, 2011, December 2013, NCJ 243055, by Erica L. Smith and Alexia Cooper, p. 14.

<sup>10</sup> John E. Douglas, Ann W. Burgess, Allen G. Burgess, and Robert K. Ressler, *Crime Classification Manual: A Standard System for Investigating and Classifying Violent Crime*, 2<sup>nd</sup> ed., Jossey-Bass 2006, p. 13. Hereinafter cited as Douglas, Burgess, Burgess, and Ressler, *Crime Classification Manual*, 2006; U.S. Department of Justice, Federal Bureau of Investigation, National Center for the Analysis of Violent Crime, Behavioral Analysis Unit, *Serial Murder: Multi-Disciplinary Perspectives for Investigators* (July 2008), p. 8, <http://www.fbi.gov/stats-services/publications/serial-murder/serial-murder-july-2008-pdf>. Hereinafter referred to as Federal Bureau of Investigation, *Serial Murder: Multi-Disciplinary Perspectives for Investigators* (July 2008); and Lin Huff-Corzine, et al., “Shooting for Accuracy: Comparing Data Sources on Mass Murder,” *Homicide Studies*, vol. 18(1), 2014, p. 106.

defined to mean a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, in one or more public locations, such as a workplace, school, restaurant, house of worship, neighborhood, or other public setting.<sup>11</sup>

The FBI profilers, notably, did not specifically address whether mass murder involved a single or multiple offenders, although in a majority of cases, mass murders involve a single offender. According to FBI profilers, a “classic mass murder” involves one person operating in one location at one period of time. They also noted “family mass murder” or “familicide” as a distinct form of mass murder. If a murderer (offender) committed suicide, the incident was labeled a murder-suicide. In this report, the definitions of three, overarching mass shooting patterns—mass public shooting, familicide mass shooting, and other felony mass shooting—mirror guidance provided by FBI profilers and other prominent criminologists. Under these definitions, offenders are not counted as victims.<sup>12</sup>

Mass shootings typically renew calls for passage of gun control legislation.<sup>13</sup> In response to the 2007 Virginia Tech massacre, for example, Congress passed the NICS Improvement Amendments Act of 2007 (P.L. 110-180), which addressed improving both federal and state electronic recordkeeping on persons ineligible to possess firearms under federal law due to past histories of mental illness or domestic violence. In response to the Newtown, CT, tragedy, the Senate considered gun control proposals, including amendments to P.L. 110-180, but tabled that legislation when a consensus could not be achieved.<sup>14</sup> In the House, similar proposals were introduced, but they were not considered in committee, nor did they reach the House floor for general debate.

Any mass shootings and subsequent calls to amend gun control laws will likely generate requests for comprehensive data on the prevalence and deadliness of these incidents. To these ends, this report provides data and analysis on mass shootings, that is, mass murders committed entirely with firearms, for a 15-year period (1999-2013) and mass public shootings for the 44-year period (1970-2013).<sup>15</sup> These datasets could possibly provide policymakers with additional vantage points from which to evaluate legislative gun control proposals that are often offered in the wake of particularly deadly mass public shootings.

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<sup>11</sup> The term “mass public shooting” has been used by several researchers and commentators, but with different meanings and victim thresholds. Grant Duwe arguably first conclusively demonstrated that “mass public shootings,” as a pattern of homicidal behavior, increased in frequency during the 1970s, 1980s, and 1990s, in his book, *Mass Murder in the United States: A History*, 2007, p. 27.

<sup>12</sup> Out of 317 incidents of mass shootings from 1999 through 2013, CRS found one incident in which a mass murderer was killed by a civilian in a justifiable homicide with a firearm.

<sup>13</sup> For example, within a week of the August 1, 1966, University of Texas, Austin, tower shooting, President Lyndon B. Johnson called on Congress to pass gun control legislation. See Gary M. Laverne, *A Sniper in the Tower: The Charles Whitman Murders*, University of North Texas Press 1997, p. 268. See also Fox and Levin, *Extreme Killing*, 2014, pp. 287-293.

<sup>14</sup> See CRS Report R42987, *Gun Control Legislation in the 113<sup>th</sup> Congress*, by William J. Krouse, for discussion and analysis of legislation considered in response to the December 2012 Newtown, CT, mass shooting.

<sup>15</sup> This report complements an April 2013 CRS report that focused on federal public health and safety implications associated with “public mass shootings.” The current CRS report, however, adopts a slightly different definition of “mass shootings” that occur in public places that does not exclude incidents that can be attributed to terrorism or hate crime. The earlier report’s definition of “public mass shooting” excluded such incidents, because the motives of offenders in those cases could be viewed as a “means to an end,” the intimidation of some larger group of people, as opposed to “indiscriminate killing.” See CRS Report R43004, *Public Mass Shootings in the United States: Selected Implications for Federal Public Health and Safety Policy*, coordinated by Jerome P. Bjelopera.

## What Constitutes Mass Killings, Multiple Murder, Mass Murder, and Mass Shootings?

In the wake of tragedy in 2012 in Newtown, CT, Congress defined “mass killings” to mean “3 or more killings in a single incident” (P.L. 112-265; January 14, 2013). That definition does not make reference to a weapon.<sup>16</sup>

In the 1980s, the FBI established a system to classify multiple murder, mass murder, spree murder, and serial murder.<sup>17</sup> These efforts were led by the FBI Behavioral Science Unit (BSU)<sup>18</sup> and National Center for the Analysis of Violent Crime (NCAVC).<sup>19</sup> Both the BSU and NCAVC began documenting and studying multiple rapists and killers, as part of a wider process to research and analyze violent crime trends.<sup>20</sup> According to several criminologists, some of whom are retired FBI Special Agents previously assigned to the BSU, crimes can be classified by type, style, and victim counts.<sup>21</sup> Homicides, for example, have been traditionally classified by victim counts (or thresholds) as follows:<sup>22</sup>

*A single homicide* is one victim slain in one event.

*A double homicide* is two victims slain, in one event, in one location.

*A triple homicide* is three victims slain, in one event, in one location.

*A mass murder* is four or more victims slain, in one event, in one location.<sup>23</sup>

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<sup>16</sup> Based on data provided to CRS by the Bureau of Justice Statistics, which are presented in **Appendix A** of this report, it can be extrapolated that the United States saw about 116 triple or greater homicide incidents per year on average from 1999 through 2011. Of those incidents, about 84 incidents were triple homicides and 32 were quadruple or greater homicides.

<sup>17</sup> Fox and Levin, *Extreme Killing*, 2014, p. 23.

<sup>18</sup> The BSU was established at the FBI in May 1972, as part of the FBI Academy. Through the BSU, the FBI trained and provided assistance to federal, state, and local law enforcement agencies in analyzing crimes, especially unsolved serial rape and murder cases. See Don DeNevi and John H. Campbell, *Into the Minds of Madmen: How the FBI's Behavioral Science Unit Revolutionized Crime Investigation* (2004), p. 79.

<sup>19</sup> The BSU-administered NCAVC was established at the FBI in 1984. In January 1986 the BSU was split into the Behavioral Science and Instruction and Research Unit (BSIRU) and the Behavioral Science Investigative Support Unit (BSISU). The former was charged with the traditional training mission of the BSU, as well as the research and development and training programs of the NCAVC. The latter was charged with offender profiling and consultative support and the Violent Criminal Apprehension Program (VICAP). See Robert K. Ressler, Ann W. Burgess, and John E. Douglas, *Sexual Homicide: Patterns and Motives* (1988), p. 102. Hereinafter referred to as Ressler, Burgess, and Douglas, *Sexual Homicide* (1988).

<sup>20</sup> Ibid, p. 236.

<sup>21</sup> Ibid, p. 138.

<sup>22</sup> Douglas, Burgess, Burgess, and Ressler, *Crime Classification Manual*, 2006, pp. 12-13.

<sup>23</sup> In a 2008 report on “serial murder,” the FBI National Center for the Analysis of Violent Crime and Behavioral Sciences Unit summarized a common understanding of the nature of “mass murder” that was held by many of the attendees at a 2005 national crime symposium:

Generally, mass murder was described as a number of murders (four or more) occurring during the same incident, with no distinctive time period between the murders. These events typically involved a single location, where the killer murdered a number of victims in an ongoing incident (e.g. the 1984 San Ysidro McDonalds incident in San Diego, California; the 1991 Luby's

(continued...)

A *spree murder* is two or more murder victims slain, in one event, in two or more locations, without the offender “cooling-off” emotionally between murders. The event, however, can be of short or long duration.

A *serial murder* is three or more separate homicidal events, with the offender cooling-off emotionally between homicidal events.<sup>24</sup>

In the view of FBI criminal profilers, a four-murder victim threshold constituted a “massacre.”<sup>25</sup> And, in this report, an offender is not included in the mass shooting victim counts, if he committed suicide, or was killed in a justifiable homicide.

In the *Crime Classification Manual*, FBI criminal profilers discuss two basic mass murder prototypes: “classic mass murder” and “family mass murder.” A classic mass murder commonly involves “a mentally disordered individual” whose problems have increased to the point that he acts out against groups of people who are unrelated to him or his problems.<sup>26</sup> The FBI criminal profilers pointed to the 1966 University of Texas, Austin, mass shooting as an example of a classic mass murder.<sup>27</sup> Sometimes, but not always, offenders in mass public shootings, which are discussed in this report, possibly fit this prototype. The FBI criminal profilers noted further that a classic mass murder event could last minutes, hours, or days.<sup>28</sup>

In addition, FBI criminal profilers identified family mass murder as a mass murder prototype, in which an offender murders four or more family members in one event and in one location.<sup>29</sup> Similarly, “familicide” is a term used to describe the murder of multiple family members, most commonly the murder of an intimate partner and children.<sup>30</sup>

These definitions with four victim thresholds, however, are not without limitations. For example, they do not capture mass murders in which three victims were shot to death, but additional victims were killed by means other than firearms.<sup>31</sup> Nor do such definitions capture murders in

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(...continued)

Restaurant massacre in Killeen, Texas; and the 2007 Virginia Tech murders in Blacksburg, Virginia).

See U.S. Department of Justice, Federal Bureau of Investigation, National Center for the Analysis of Violent Crime, Behavioral Analysis Unit, *Serial Murder: Multi-Disciplinary Perspectives for Investigators* (July 2008), p. 8, <http://www.fbi.gov/stats-services/publications/serial-murder/serial-murder-july-2008-pdf>. Hereinafter referred to as Federal Bureau of Investigation, *Serial Murder: Multi-Disciplinary Perspectives for Investigators* (July 2008).

<sup>24</sup> Ibid, pp. 138-139. In the Protection of Children from Sexual Predator Act of 1998 (P.L. 105-314; October 30, 1998; 112 Stat. 2974, 2987), Congress defined “serial killings” to mean “a series of three or more killings, not less than one of which was committed within the United States, having common characteristics such as to suggest the reasonable possibility that the crimes were committed by the same actor or actors” (28 U.S.C. §540B(b)(2)). This provision authorizes the Attorney General and the FBI Director to investigate serial killings in violation of the laws of a state or political subdivision, if such investigation is requested by the head of a law enforcement agency with investigative or prosecutorial jurisdiction over the offense (see 28 U.S.C. §540B(a)).

<sup>25</sup> Fox and Levin, *Extreme Killing*, 2014, p. 23.

<sup>26</sup> Douglas, Burgess, Burgess, and Ressler, *Crime Classification Manual*, 2006, p. 113.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Marieke Liem, Jack Levin, Curtis Holland, and James A. Fox, “The Nature and Prevalence of Familicide in the United States, 2000-2009,” *Journal of Family Violence*, vol. 28, 2013, p. 351.

<sup>31</sup> On May 23, 2014, an offender murdered six people in Isla Vista, CA. He stabbed three victims, and shot three more (continued...)

which fewer than four victims were shot to death, but several victims were wounded, sometimes seriously.

It is also noteworthy that these FBI classifications of multiple homicides—double, triple, mass, spree, and serial—were largely conceptualized to aid law enforcement in investigations through criminal profiling and not for statistical data collection purposes.<sup>32</sup> When the cases of individual offenders are evaluated, there sometimes exists potential for overlap among these classifications, particularly for mass and spree murders, and less so for mass and serial murders.<sup>33</sup> Consequently, for statistical purposes, these classifications are not always mutually exclusive, which in some cases can present difficulties for researchers and can result in different judgments and varying findings with regard to the frequency and deadliness of these incidents.

According to one journal article, in 2010 the FBI adopted a revised definition of *mass murder*, that is, *murderous events resulting in at least four deaths normally taking place at one or more geographical locations relatively near one another*.<sup>34</sup> This revised definition indicates that the potential overlap between mass and spree murders is an issue that has been addressed. As demonstrated below, the definitions used in this report of three, overarching mass shooting patterns—mass public shooting, familicide mass shooting, and other felony mass shooting—mirror in part concepts and definitions developed by FBI profilers.

Notwithstanding FBI guidance, gun control and rights advocates, media outlets, law enforcement agencies, and academic researchers often adopt quite different definitions of “mass murder,” “mass shootings,” and “mass public shootings.”<sup>35</sup> As a result, their findings often vary.

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(...continued)

victims to death, before committing suicide by shooting himself. He shot and wounded at least two others and injured 11. He reportedly carried three semiautomatic pistols equipped with multiple ten-round magazines, all of which he had legally acquired under both federal and California state law. About a month prior to the shootings, he had exhibited disturbing online behavior that prompted his parents to call the police. However, when the police stopped by his apartment on a “welfare” stop, he was able to convince them reportedly that he was “depressed,” but posed no threat to anyone. He reportedly recognized that encounter with the police was a close call, for he had already purchased the three handguns and had already written a misogynistic diatribe outlining his plan to seek retribution against those who had allegedly mistreated and disrespected him. For further information, see Santa Barbara County Sheriff’s Office, *Isla Vista Mass Murder, May 23, 2014, Investigative Summary*, February 18, 2015, 68 pp.

<sup>32</sup> Robert K. Ressler, Ann W. Burgess, and John E. Douglas, *Sexual Homicide: Patterns and Motives* (1988), p. 140.

<sup>33</sup> For example, spree murderers have killed four or more persons at a single location, as well as additional victims at other locations. Thus, those spree murderers could also be classified as mass murderers, but only for that incident. And some spree murderers have killed four or more people at two or more locations within a single municipality or county within a time frame of comparatively short duration, such as less than 24 hours. These spree murderers could also be classified as mass murderers, if the two or more murder locations were comparatively close in proximity and, thus, could possibly be considered one location, and the murders a single incident. In October 2002, two offenders shot to death 10 victims and wounded 3 others in several incidents in the greater Washington, DC, area. On October 3, 2002, during a 14-hour period, however, they shot five of those victims to death from several concealed positions within Montgomery County, MD, and Washington, DC. For the purpose of this report, the murders on October 3, 2002, are considered a single mass public shooting. Out of 66 mass public shootings from 1999 to 2013, in addition to the April 20, 1999, Columbine, CO, mass shooting, the October 3, 2002, Washington, DC, area sniper (mass) shooting was the only other incident that involved more than one offender.

<sup>34</sup> Lin Huff-Corzine, et al., “Shooting for Accuracy: Comparing Data Sources on Mass Murder,” *Homicide Studies*, vol. 18(1), 2014, p. 113.

<sup>35</sup> For example, one researcher defined a “mass public shooting” to be any incident that “occurred in a public place and involved two or more people either killed or injured by the shooting.” See John R. Lott, Jr., *More Guns, Less Crime: Understanding Crime and Gun Control Laws* (University of Chicago Press, 2000), p. 100. Other researchers defined “mass shooting” to include any incident where three or more people are killed or injured. See Brady Campaign to (continued...)



Nevertheless, the four-victim threshold and other elements of the above definitions reflect a synthesis arguably of the most conclusive, academically rigorous research available on “mass murder.” That research is discussed immediately below.

## Mass Murder Counts Based on FBI Supplementary Homicide Reports

Despite the public trauma and outcry generated by mass public shootings, there is a dearth of comprehensive, authoritative data on multiple-victim homicide incidents, either committed wholly or partially with firearms. A handful of criminologists, statisticians, sociologists, and other researchers have analyzed the principal source of national homicide statistics that is compiled by the Department of Justice (DOJ) annually, as part of the FBI’s Uniform Crime Reports and Supplementary Homicide Reports (UCR-SHR).<sup>36</sup> From their analyses, the following observations and extrapolations can be made:

- DOJ’s Bureau of Justice Statistics (BJS) *estimated* that there were 987 four or more victim homicide incidents from 1980 to 2011, or an average 31 per year.<sup>37</sup> However, while the bulk of those incidents were mass murders, it is probable that some of those incidents were serial murders committed over extended time periods, or spree murders that lasted longer than roughly 24 hours.<sup>38</sup> For that 31-year period, four or more victim homicides incidents accounted for 0.19% of all murders and nonnegligent manslaughter incidents and 0.87% of all victims who perished in those incidents.<sup>39</sup>
- James Alan Fox and Jack Levin *estimated* that there were 927 mass murders, resulting in the deaths of four or more victims, from 1976 to 2011, or an average of 26 incidents per year, involving 4,330 victims.<sup>40</sup>
- Grant Duwe *found* that there were at least 649 mass murders, resulting in the deaths of four or more victims, from 1976 to 1999, or an average of 27 per year,

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(...continued)

Prevent Gun Violence, *Mass Shootings in the United States Since 2005*, last updated December 14, 2012, <http://www.bradycampaign.org/sites/default/files/major-shootings.pdf>.

<sup>36</sup> The FBI began collecting monthly crime reports from city, county, and state law enforcement agencies in 1930. Today, as part of the UCR program, the FBI collects incident, victim, property, offender, and arrestee data for 22 crime categories. In 1976, the FBI began collecting SHRs to capture greater data on homicides, including the method of murder. For a discussion of “Data for Measuring Firearms Violence and Ownership,” see National Research Council, *Firearms and Violence: A Critical Review*, National Academies Press, 2005, p. 26. For a more in-depth discussion of the data, see James Alan Fox, *Uniform Crime Reports (United States): Supplementary Homicide Reports, 1976-2002*, Ann Arbor, MI: Inter-University Consortium of Political and Social Research, 2005, <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/4179>.

<sup>37</sup> U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Homicide in the U.S. Known to Law Enforcement*, 2011, December 2013, NCJ 243055, by Erica L. Smith and Alexia Cooper, p. 14.

<sup>38</sup> Some researchers have chosen to categorize spree murders that occur within a 24-hour window as “mass murders,” or “mass/spree murders.” See Hannah Scott and Katie Fleming, “The Female Family Annihilator: An Exploratory Study,” *Homicide Studies*, vol. 18(1), 2013, p. 63.

<sup>39</sup> *Ibid.*

<sup>40</sup> Fox and Levin, *Extreme Killing*, 2014, p. 163.

and 5.22 murder victims per incident.<sup>41</sup> Of those mass murders, firearms were used in 69% of the incidents, from which it could be extrapolated that about 448 of the 649 mass murder incidents were mass public shootings, or an average per year of 18.7 mass shootings. Duwe not only analyzed the FBI SHR data, but he *verified* that all the homicidal incidents reported to the FBI were recorded properly by state and local law enforcement agencies on the SHR form as multiple victim homicides.<sup>42</sup> He also supplemented his dataset with incidents not reported to the FBI, but reported in the press. In January 2013, Duwe provided the *Washington Post* with updated and slightly revised estimates of mass public shootings. On average annually, Duwe's data show that there were:

- 1.3 mass public shootings per year in the 1970s,
- 3.2 per year in the 1980s, and
- 4.2 per year in the 1990s.<sup>43</sup>
- According to *USA Today*, offenders committed roughly 242 mass murders, resulting in the deaths of four or more victims, from 2006 to 2013, or an average of 30.3 incidents per year, and 4.98 victims per incident. Mass shootings accounted for 21.5 incidents per year with 5.1 victims per incident. Another 1.25 mass murder incidents per year involved at least some firearms and resulted in 4.8 victims per incident. The remaining 7.5 mass murder incidents per year resulted in 4.3 victims per incident and did not involve firearms (for a small percentage of incidents (2.1%), the murder weapons were unknown).<sup>44</sup>

In the homicide incidents mentioned above, which resulted in the deaths of four or more victims, BJS, Fox and Levin, Duwe, and *USA Today* found that offenders used firearms to kill victims more often than any other means to murder people. A more detailed summation of their findings can be found in **Appendix A**.

## CRS Methodology and Patterns of Mass Murder and Mass Shootings

For this report, CRS has gathered and analyzed data on mass shootings for the 15-year period 1999 to 2013. Drawing on the work of James Alan Fox and Jack Levin, Grant Duwe, and Meghan Hoyer (and colleagues at *USA Today*), CRS took the following steps:

- analyzed the FBI SHR data, the nation's primary data source on murder and nonnegligent manslaughter in the United States;

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<sup>41</sup> Grant Duwe, *Mass Murder in the United States: A History*, 2007, p. 23.

<sup>42</sup> In some instances, several individual homicides were misreported on the same SHR form as multiple victim homicides. In other instances, wounded victims are reported as murdered, making double and triple homicides appear to be quadruple or greater homicides.

<sup>43</sup> See Glenn Kessler, "Clinton's Gun Remark Is off the Mark," *Washington Post*, January 13, 2013, p. A02.

<sup>44</sup> "Explore the Data on U.S. Mass Killings Since 2006," *USA Today*, <http://www.usatoday.com/story/news/nation/2013/09/16/mass-killings-data-map/2820423/>.

- verified the mass murders reported to the FBI by checking press accounts and, when needed, consulted with the reporting police agencies themselves;
- cross-referenced this data with mass murders with firearms lists compiled by advocacy groups, media outlets, and law enforcement agencies;
- supplemented the SHR data with mass shootings reported in the press, but not reported to the FBI or previously compiled by other researchers;
- evaluated every incident based on victim-offender relationships, incident locations, and other pertinent event characteristics and circumstances; and
- found three broad patterns of mass shootings that could provide policymakers with improved vantage points from which to evaluate gun control proposals.

When it comes to mass murder with firearms, mass shootings in public places have dominated the national dialogue about gun violence, partly due to several mass public shootings in recent years (2007, 2009, and 2012) that resulted in double-digit victim counts. While others have used the term, Grant Duwe first conceptualized the idea of a mass public shooting as a “pattern” or “form” of mass murder in his book, *Mass Murder in the United States: A History* (2007) as it is most commonly understood today.<sup>45</sup> Duwe observed:

The mass murders that often capture the public’s imagination are those in which an offender publically guns down victims for no apparent rhyme or reason. Of the 250 incidents that took place from 1900 through 1999, 191 involved offenders who used firearms. Excluding those that occurred in connection with criminal activity such as robbery, drug dealing, and organized crime, there were 116 mass public shootings during the twentieth century.<sup>46</sup>

Duwe defined mass public shooting as “any incident in which four or more victims are killed publicly in a workplace, school, restaurant, or other public place with guns and within 24 hours.”<sup>47</sup>

As noted above, according to the *Crime Classification Manual*,<sup>48</sup> there are two basic types, or categories, of mass murder. There are “classic mass murders” and “family mass murders.” A “classic mass murder” is generally thought to involve one person operating in one location during one period of time, which could be minutes, hours, or even days. “The classic mass murder prototype is a mentally disordered individual whose problems have increased to the point that he acts out against groups of people who are unrelated to him or his problems.”<sup>49</sup> This profile sometimes, but not always, fits the profile of offenders involved in mass public shootings.

A “familicide” mass murder is generally agreed to involve an offender who kills four or more family members, most commonly a spouse or intimate partner and children. In this report, mass shootings involving the murder of family members by non-family members *are not* characterized as familicides. As demonstrated below, offenders in mass public shootings and familicide mass shootings often share some of the same attributes. For example, in mass public shootings and

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<sup>45</sup> Grant Duwe, *Mass Murder in the United States: A History*, 2007, p. 27.

<sup>46</sup> Ibid.

<sup>47</sup> See Glenn Kessler, “Clinton’s Gun Remark Is off the Mark,” *Washington Post*, January 13, 2013, p. A02.

<sup>48</sup> Douglas, Burgess, Burgess, and Ressler, *Crime Classification Manual*, 2006, p. 13.

<sup>49</sup> Ibid.



familicide mass shootings, nearly all the offenders were lone assailants. Over half of the offenders in either type of mass murder committed suicide or were killed by responding police, when they resisted arrest. In many cases, the offenders had little or no practical expectation of escape.

When data on mass shootings were disaggregated, however, some mass shootings did not fit cleanly into either the classic mass murder or family mass murder pattern. A large percentage of these mass murders included gangland executions, drug-related home invasions and robberies, botched holdups, and other crimes. Others were arguments, romantic triangles, or barroom brawls that escalated into shootouts. In other words, some, but not all, of the mass shootings could be attributed to some other underlying felonious criminal activity or commonplace circumstance. These mass shooting incidents more frequently involved multiple offenders. While these offenders might not have considered the long-term implications of their crimes, they usually held out at least some expectation that they would not be discovered, arrested, and held accountable for their crimes.

Based on FBI guidance in part, Duwe, and others, CRS adopted the following parallel definitions for patterns of “mass murder” committed entirely with firearms:

- “mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and in one or more locations in close geographical proximity;
- “mass public shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders *are not* attributable to any other underlying criminal activity or commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle);
- “familicide mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and a majority of the victims were members of the offender’s immediate or extended family, the majority of whom were murdered in one or more private residences or secluded, sparsely populated settings in close geographical proximity, and the murders are not attributable to any other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle); and
- “other felony mass shooting” means a multiple victim homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, in one or more locations in close geographical proximity, and the murders *are* attributable to some other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

For the purposes of this report, CRS has chosen not to include any timeframe parameter for the mass shooting definitions discussed above, but it is noteworthy that most mass shootings typically lasted little more than several minutes. However, several prominent researchers,

including Duwe as seen above, have defined either “mass murder” or “mass public shooting” with a timeframe parameter of “24 hours.”<sup>50</sup>

As also noted above, the FBI has traditionally viewed “mass murders” as four or more murder victim multicides that occur in a single event or incident and single location, but a “single location” could be construed as a neighborhood, or even a distinct geographical area that might be situated in different but adjoining states. To address this possibility, the FBI reportedly changed its definition of “mass murder” to account for “murderous events” that occur in multiple locations that are geographically near one another.<sup>51</sup>

Along these lines, CRS has crafted its definition of mass public shooting with a scope wide enough to capture incidents that occurred in multiple locations (that is, incidents that occurred in both public and private locations), or neighborhood spree killings that involved several private residences in the same neighborhood, but belonging to different family units, yet might still be considered “public,” and a single event that occurred in one general location. Five of 66 mass public shootings in the CRS dataset could be characterized as four or more victim spree murders, or mass/spree murders.

In addition, CRS has also crafted its definition of mass public shooting narrowly enough to exclude mass shootings that occurred in remote or secluded, sparsely populated “public” places (e.g., parks, national forests, and rural back roads), where the likelihood of police intervention was low. In summation, CRS has generally characterized any mass murder with firearms as a mass public shooting, if four victims were shot to death and the incidents occurred wholly or partially in public spaces, except for those incidents that occurred in public, but comparatively secluded and sparsely populated locations.<sup>52</sup>

It is noteworthy that there is a number of mass public shootings in the CRS dataset—about one-fifth—that were possibly triggered by a domestic dispute, but either all or a majority of the victims were not related to the offender(s). Four other incidents, which were characterized as mass public shootings, could have also been characterized as familicides, in that the offender was a spouse or former intimate partner of one of the victims and the other victims were all, or nearly all, family members. These incidents were characterized as mass public shootings because they occurred in a roller rink, day spa, and two houses of worship.

In addition, family units were annihilated with firearms in some of the incidents included in the other felony mass shooting dataset; however, the offenders were generally rival drug dealers or gang members, or both, and were not related to the victims by blood, marriage, or other form of domestic union. Nearly all of the mass murders characterized as familicide mass shooting incidents in this report occurred in private residences or remote locations, and involved lone offenders who were either a family member or a former intimate partner of a family member. Notwithstanding the potential for overlap, it follows that there are conceptually at least three

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<sup>50</sup> Hannah Scott and Katie Fleming, “The Female Family Annihilator: An Exploratory Study,” *Homicide Studies*, vol. 18(1), 2014, p. 63.

<sup>51</sup> Lin Huff-Corzine, et al., “Shooting for Accuracy: Comparing Data Sources on Mass Murder,” *Homicide Studies*, vol. 18(1), 2014, p. 113.

<sup>52</sup> For example, CRS categorized a November 1973 Sioux Falls, SD, mass shooting as an other felony mass shooting even though it occurred in Gitchie Manitou State Preserve. Although the preserve is a public place, it is also a remote and sparsely populated setting. In this case, there were three offenders, who were brothers. They murdered two couples, raping both females, before shooting all four victims to death.

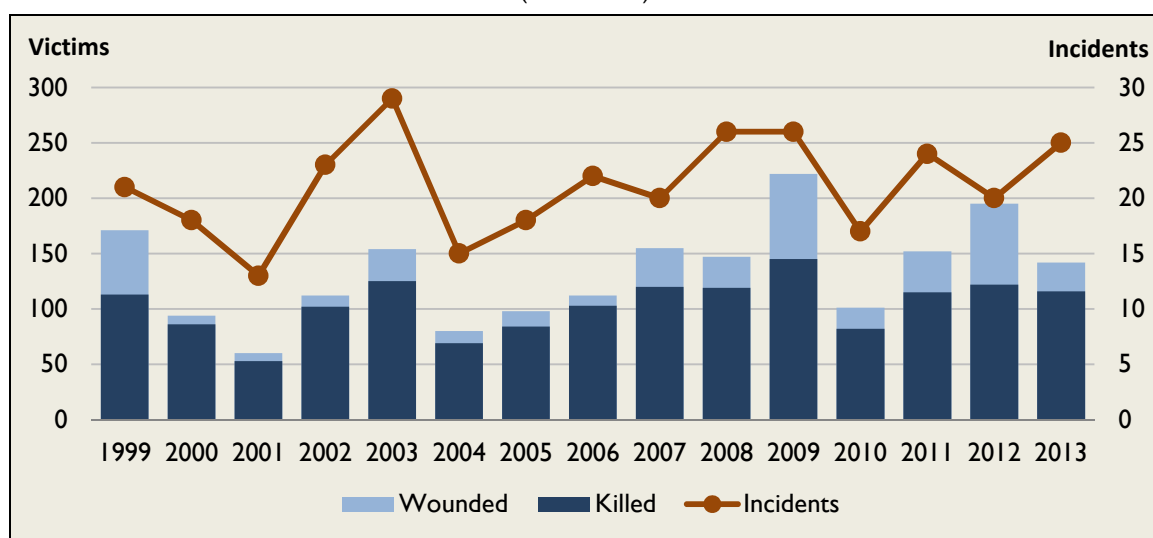
broad patterns of mass murder and, by extension, mass shootings: mass public shootings, familicide mass shootings, and other felony mass shootings.

CRS assigned individual incidents to only one of these three patterns after evaluating the specific location(s), offender-victim relationships, and other pertinent circumstances. Hence, the data subsets are mutually exclusive in this report. Other analysts and researchers could take the same datasets and make different distinctions, judgments, and findings. However, CRS categorized the incidents in this report based largely on the findings of other researchers with the objective of establishing as much comparability among studies as possible. While a handful of cases could possibly be placed in more than one category, like the four familicides in the mass public shooting category, most of the incidents fell within one of the three patterns outlined above.

## Mass Shootings Findings

As shown in **Figure 1**, CRS analysis of the FBI SHR and other data sources indicate that offenders committed at least 317 mass shooting incidents in the United States, murdering 1,554 victims and non-fatally wounding another 441 victims from 1999 through 2013.<sup>53</sup> During that 15-year period, there were on average 21 mass shooting incidents per year, with an average of 104 total murder victims and 29 wounded victims per year resulting from those incidents. As shown in **Table 1**, based on five-year averages, there was an uptick in mass shooting incidents and casualties during the last five years of the 15-year period. The annual incident and casualty counts shown in **Figure 1** and underlying **Table 1** are provided in **Table B-1**.

**Figure 1. Mass Shootings**  
(1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

<sup>53</sup> Like BJS, Fox, and Duwe, CRS initiated its research by analyzing FBI SHR data. Like Duwe, CRS verified that quadruple and greater homicide incidents reported to the FBI were recorded properly by state and local law enforcement agencies on the SHR form and, then, supplemented the dataset with incidents not reported to the FBI.

**Notes:** “Mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and in one or more locations in close geographical proximity.

**Table 1. Mass Shootings: Five-Year Annual Averages**

	Incidents	Victims Killed	Victims Wounded	Total Casualties
1999-2003	20.8	95.8	22.4	118.2
2004-2008	20.2	99.0	19.4	118.4
2009-2013	22.4	116.0	46.4	162.4

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and in one or more locations in close geographical proximity.

In addition to providing overall data on “mass shootings,” this report builds on the work of noted criminologists and others, and provides statistical breakouts and further analysis for three broad patterns of mass shootings. In summary, those 21 mass shootings annually on average fall into the following broad patterns:

- four (4.4) were “mass public shootings” in which four or more victims were shot to death in one or more public locations, such as a workplace, school, restaurant, house of worship, or neighborhood, and the murders *were not* attributable to any underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle);
- eight (8.5) mass shootings were “familicides” in which a parent, former intimate partner, or less often a child (progeny), shot four or more victims to death, and a majority of those victims were murdered in private residences or secluded, sparsely populated settings, and the murders *were not* attributable to any underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle); and
- eight (8.3) mass shootings could be characterized as “other felony mass murders” in which victims were shot to death, and the murders *were* attributable to an underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

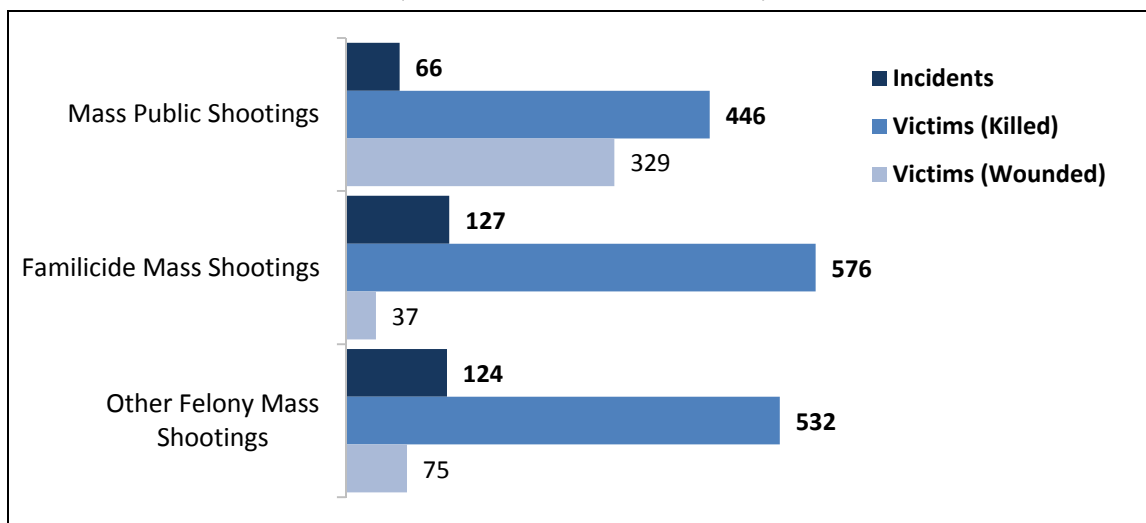
The 15-year dataset compiled by CRS indicates that the prevalence and deadliness of mass shootings overall fluctuated sporadically from year to year.<sup>54</sup> As discussed below, based on five-year averages, the data show that mass shootings increased slightly during the five-year period (2009-2013) compared to earlier five-year periods (1999-2003 and 2004-2008), suggesting an uptick in these incidents in recent years. Mass public shootings and familicide mass shootings also increased slightly, while other felony mass shooting incident and casualty counts decreased

<sup>54</sup> One study found that for the 36-year period 1976-2011 that the prevalence of mass shootings overall also varied considerably from year to year, but largely held steady at about 20 incidents per year on average over that time period. See James Alan Fox and Monica J. DeLateur, “Mass Shootings in America: Moving Beyond Newtown,” *Homicide Studies*, February 2014, p. 129, <http://dropbox.curry.com/ShowNotesArchive/2013/12/NA-576-2013-12-22/Assets/War%20on%20Crazy/Homicide%20Studies-2013.pdf>.

slightly, suggesting that the composition of mass shootings has possibly changed over that 15-year timespan (1999-2013). **Figure 2** shows the actual victim and casualty counts for public, familicide, and other felony mass shootings. Familicide and other felony mass shootings occurred twice as frequently as mass public shootings. Compared to familicide (4.8) and other felony mass shootings (4.9), public mass shootings accounted for twice the number of victims (killed and wounded) per incident (11.7).

**Figure 2. Mass Public, Familicide, and Other Felony Mass Shootings**

(Incidents and Victims, 1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups

In consultation with Grant Duwe, CRS has re-evaluated his data on “mass public shootings” for the 1970s, 1980s, and 1990s. For example, CRS eliminated some of the Duwe-reported mass public shootings, because upon further examination some of those incidents could be characterized as other felony mass shootings.<sup>55</sup> Based on the CRS definition of “mass public shootings,” the data show there were on average:

- one (1.1) incident per year during the 1970s (5.5 victims murdered, 2.0 wounded per incident),
- nearly three (2.7) incidents per year during the 1980s (6.1 victims murdered, 5.3 wounded per incident),
- four (4.0) incidents per year during the 1990s (5.6 victims murdered, 5.5 wounded per incident),
- four (4.1) incidents per year during the 2000s (6.4 victims murdered, 4.0 wounded per incident), and

<sup>55</sup> For example, CRS categorized an unsolved September 1984, Detroit, MI, mass shooting involving a disputed dice game, and a January 1993 Palantine, IL, mass shooting (Brown’s Chicken and Pasta) that started out as a robbery, as other felony mass shootings.

- four (4.5) incidents per year from 2010 through 2013 (7.4 victims murdered, 6.3 wounded per incident).

These decade-long averages indicate that the prevalence, if not the deadliness, of mass public shootings has increased, but whether these increases constituted an “epidemic,” as some have argued, would be a matter of perspective. As the data show, the United States saw about four mass public shootings per year on average in the 1990s and 2000s. The first four years of this decade saw an uptick in both the prevalence and deadliness of those incidents.

In terms of deadliness, over the past half century, there have been 13 mass public shootings that resulted in comparatively high casualty counts in terms of double-digit (greater than nine) murder victim counts. Seven of those high-casualty mass public shooting incidents occurred in the past seven years, and resulted in over half of the murder victims and nearly half of the wounded associated with those 13 incidents. Two of those mass public shootings, the December 2012 Newtown, CT,<sup>56</sup> and the April 2007 Blacksburg, VA (Virginia Polytechnic Institute and State University, or VA Tech)<sup>57</sup> mass shootings, resulted in the highest death tolls on record.

## Mass Public Shootings

As shown in **Figure 3**, offenders committed 66 mass public shootings, murdering 446 victims and non-fatally wounding another 329 victims from 1999 through 2013. As with mass shootings generally for that 15-year period, the number of mass public shooting incidents (4.4 per year on average) increased and decreased with considerable variation from year to year. Meanwhile, the casualty counts in terms of killed and/or wounded per year increased for 1999, 2007, 2009, and 2012, due to several incidents that resulted in 10 or more victims killed and sometimes several times more wounded. The average and median age of victims killed was 39 years of age. Notably, the mode was 6 years of age, demonstrating the singularity of Newtown.

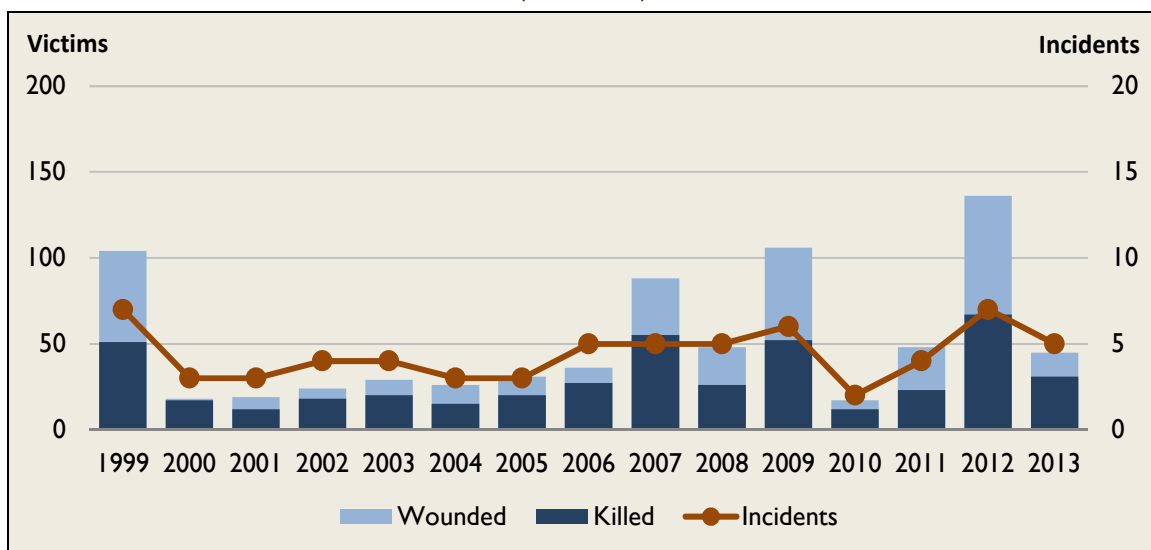
As shown in **Table 2**, five-year averages for both incident and victim counts were higher for the last five years than the preceding 10-year period (1999-2008). However, those increases were largely driven by a few incidents in 2012. If 2012 were excluded, the averages would actually have been lower than the preceding five-year period (2004-2008). The annual incident and casualty counts shown in **Figure 3** and underlying **Table 2** are provided in **Table B-2**.

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<sup>56</sup> On December 14, 2012, in Newtown, CT, a 20-year-old male entered Sandy Hook Elementary School and shot 20 first graders and 6 adult staff members to death. He also shot his mother to death. For further information, see *Report of the State’s Attorney for the Judicial District of Danbury on the Shootings at Sandy Hook Elementary School and 36 Yogananda Street, Newtown, Connecticut on December 14, 2012*, November 25, 2013, 116 pp.

<sup>57</sup> On April 16, 2007, a student at Virginia Polytechnic Institute and State University shot 32 people to death and wounded many others. For further information, see *Mass Shootings at Virginia Tech, April 16, 2007: Report of the Virginia Tech Review Panel Presented to Timothy M. Kaine, Governor, Commonwealth of Virginia*, August 2007, 147 pp.

**Figure 3. Mass Public Shootings at Workplace, Schools, Restaurants, and Other Public Places**  
(1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Mass public shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders *are not* attributable to any other underlying criminal activity or commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

**Table 2. Mass Public Shootings: Five-Year Annual Averages**

	Incidents	Victims Killed	Victims Wounded	Total Casualties
1999-2003	4.2	23.6	15.2	38.8
2004-2008	4.2	28.6	17.2	45.8
2009-2013	4.8	37.0	33.4	70.4

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Mass public shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders *are not* attributable to any other underlying criminal activity or commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

Offenders used firearms that could be characterized as “assault weapons” in 18 of 66 incidents (27.3%), in that they carried rifles or pistols capable of accepting detachable magazines that might have previously fallen under the 10-year, now-expired federal assault weapons ban (1994-2004). In one of those incidents, the assault weapon had been illegally converted into a machine gun.<sup>58</sup> In another case, an off-duty police officer used a legally registered machine gun that had

<sup>58</sup> Under the 1934 National Firearms Act (NFA), the term “machine gun” is defined as any weapon which shoots, is (continued...)



been issued to him by his department.<sup>59</sup> In 38 incidents, the offender carried a single firearm. In 28 out of 66 incidents (42.4%), offender or offenders carried multiple firearms. At least seven offenders held concealed carry permits according to the Violence Policy Center.<sup>60</sup> None of the mass public shootings remained unsolved, unlike other felony mass shootings.

A domestic dispute of some type was allegedly a precipitating factor in roughly a fifth (21.2%) of “mass public shootings,” or at least 14 of the 66 incidents. Four other mass public shooting incidents could also be characterized as familicides, in that a spouse or former intimate partner murdered four or more family members, but in a public space. CRS categorized these incidents as mass public shootings for two reasons: they did not occur in secluded, sparsely populated locations, and other researchers had categorized these incidents as mass public shootings.<sup>61</sup> One mass public shooting could be characterized as terrorist attack: the November 5, 2009, Fort Hood, TX, mass shooting. Four other mass public shooting incidents included some element of racial or ethnic animus: those incidents occurred in a trailer park, work place, outdoors, and house of worship. The latter incident was the August 5, 2012, Oak Creek, WI, Sikh Temple mass shooting. In total, six out of 66 mass public shootings (9.1%) occurred in a house of worship. Seven

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(...continued)

designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term also includes the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machine gun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person (26 U.S.C. §5845(b)). Enacted as part of the Internal Revenue Code, the NFA levies taxes on all aspects of the manufacture/importation and distribution of such firearms, and requires that these firearms and their owners be registered at every point the firearms change ownership in the chain of commerce.

By comparison, under the Gun Control Act (GCA) of 1968, the term “semiautomatic rifle” is defined as any repeating rifle which uses a portion of the energy of a firing cartridge to extract the fired cartridge case and chamber the next round, and which requires a separate pull of the trigger to fire each cartridge (18 U.S.C. §921(a)(28)). Semiautomatic pistol and rifle are similarly defined in the *Code of Federal Regulations* (27 C.F.R. §478.11).

On September 6, 2011, a 32-year-old male offender entered a Carson City, NV, restaurant and shot four people to death and wounded another seven with a 7.62mm Norinco Mak-90, which had been illegally converted from a semiautomatic rifle into a machine gun. Investigators reportedly recovered sixteen 30-round magazines. The offender reportedly emptied one magazine into the air before entering the restaurant and reloaded with two more magazines, firing 79 rounds in 1 minute and 25 seconds. Afterwards, the offender committed suicide with a .38 caliber revolver. According to press accounts, he had been diagnosed as a paranoid schizophrenic in 1999 and had been involuntarily committed once by police in California according to press accounts. See Martha Bellisle, “IHOP Shooting One Year Later: 85 Seconds That Changed Carson City,” *Reno Gazette-Journal*, September 3, 2012.

<sup>59</sup> On April 9, 2002, a 42-year old male offender and off-duty police officer used his department-issued MP5 machine gun in a Toms River, NJ, neighborhood shooting spree, or “mass public shooting,” in which he shot five people to death, before committing suicide. See Jean Mickle, “Killer Cop’s Victims’ Kin Get \$5.7M,” *Asbury Park Press (New Jersey)*, August 1, 2007.

<sup>60</sup> Violence Policy Center, *Concealed Carry Killers*, <https://www.vpc.org/ccwkillers.htm>.

<sup>61</sup> “A Guide to Mass Shootings in America,” *Mother Jones*. Mother Jones included at least two familicides committed in public places in its dataset. Those incidents included a March 1999 Gonzales, LA, church shooting and a February 2012 Norcross, GA, day spa shooting. In a previous report, CRS retained the church shooting in its dataset, but eliminated the day spa shooting. See CRS Report R43004, *Public Mass Shootings in the United States: Selected Implications for Federal Public Health and Safety Policy*, coordinated by Jerome P. Bjelopera.

In this report, CRS took an inclusive approach towards categorizing mass public shootings and categorized these incidents as Mother Jones did, with idea of establishing an initial dataset that could be as widely agreed upon as possible as a starting point for further analysis and debate about the nature of these incidents. CRS found two incidents that were very similar to these incidents, which are also included in this report’s mass public shootings dataset. They included a May 2006 Baton Rouge, LA, church shooting and a July 2011 Grand Prairie, TX, roller rink shooting.



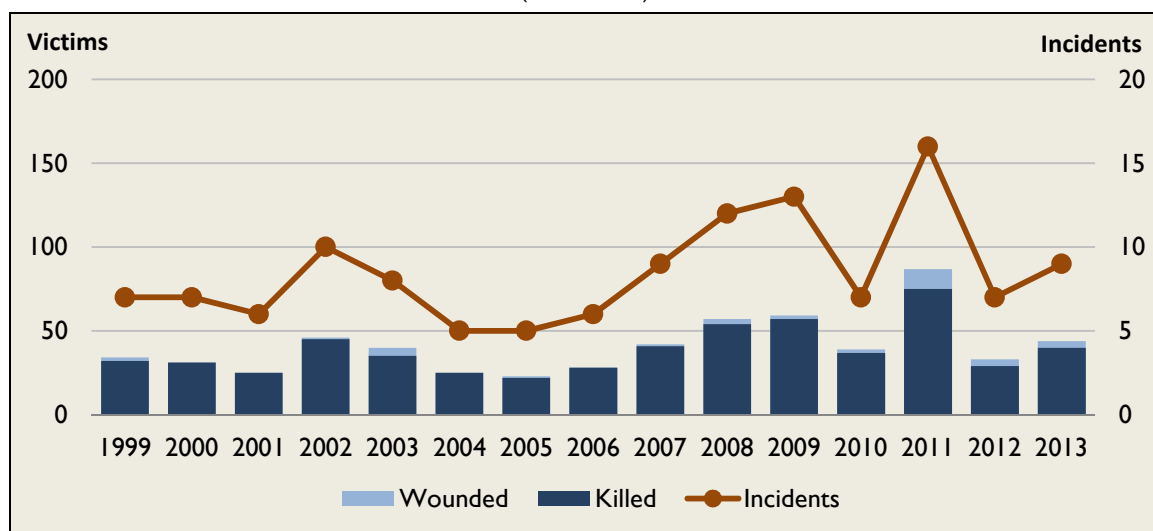
incidents (10.6%) occurred in schools or universities. Eighteen incidents (27.3%) occurred in workplaces.

Out of 68 offenders, 39 offenders committed suicide (57.4%), 8 were killed by police, 2 were wounded and then arrested, and the remaining 18 were arrested. One offender was female. All but two of these incidents involved single offenders. Those two incidents included the April 20, 1999, Columbine, CO, high school shooting and the October 3, 2002, Washington, DC, area sniper attacks. The average and median age of offenders was 36 years old, the mode was 42. Three offenders were juveniles (less than 18 years old), including the two co-conspirators in the Columbine, CO, and DC-area shootings.

## Familicide Mass Shootings

As shown in **Figure 4**, offenders committed 127 familicide mass shootings, murdering 576 victims and nonfatally wounding another 37 victims from 1999 through 2013. During that 15-year period, familicide mass shootings (8.47 incidents per year on average) occurred twice as frequently as mass public shootings. The average age of victims killed was 27 years old; median, 30; and mode, 1 or less than 1.

**Figure 4. Familicide Mass Shootings**  
(1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Familicide mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and a majority of the victims were members of the offender’s immediate or extended family, the majority of whom were murdered in one or more private residences or secluded, sparsely populated settings in close geographical proximity, and the murders are not attributable to any other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

As shown in **Table 3**, based on five-year averages, there was an increase in familicide mass shooting incidents and casualties during the last five years of the 15-year period. The annual incident and casualty counts shown in **Figure 4** and underlying **Table 3** are provided in **Table B-3**.

**Table 3. Familicide Mass Shootings: Five-Year Annual Averages**

	Incidents	Victims Killed	Victims Wounded	Total Casualties
1999-2003	7.6	33.6	1.6	35.2
2004-2008	7.4	34.0	1.0	35.0
2009-2013	10.4	47.6	4.8	52.4

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Familicide mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and a majority of the victims were members of the offender’s immediate or extended family, the majority of whom were murdered in one or more private residences or secluded, sparsely populated settings in close geographical proximity, and the murders are not attributable to any other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

Out of 129 offenders, 72 offenders committed suicide (55.8%), five were killed by police, and 57 were arrested. Five offenders were female. Two incidents involved multiple (two) offenders. The average age of the offenders was 35.5 years, the median 35, and the mode 27. In one case, an offender used a firearm that could be characterized as an “assault weapon,” with which he murdered a single victim, his father.<sup>62</sup> He was 16 years old. In familicide mass shootings, most offenders (86.9%) carried and used a single firearm. Like mass public shootings, but unlike other felony mass shootings, none of the familicide mass shootings remained unsolved.

Most familicide mass shooting offenders were male heads of household or former domestic intimate partners. In a few cases, the offenders were progeny (sons), ex-boyfriends of daughters, or boyfriends with progeny co-conspirators (daughters). These incidents tended to occur late at night or in the early morning hours in private households. In such cases, there is arguably little expectation that the police will be able to intervene to prevent or end such shootings without greater loss of life. On the other hand, there have been cases where domestic violence restraining orders and the longevity of those restraining orders were an issue.<sup>63</sup>

## Other Felony Mass Shootings

As shown in **Figure 5**, offenders committed 124 other felony mass shootings, murdering 532 victims and non-fatally wounding another 75 victims from 1999 through 2013. During that 15-year period, like familicide mass shootings, other felony mass shootings (8.27 incidents per year

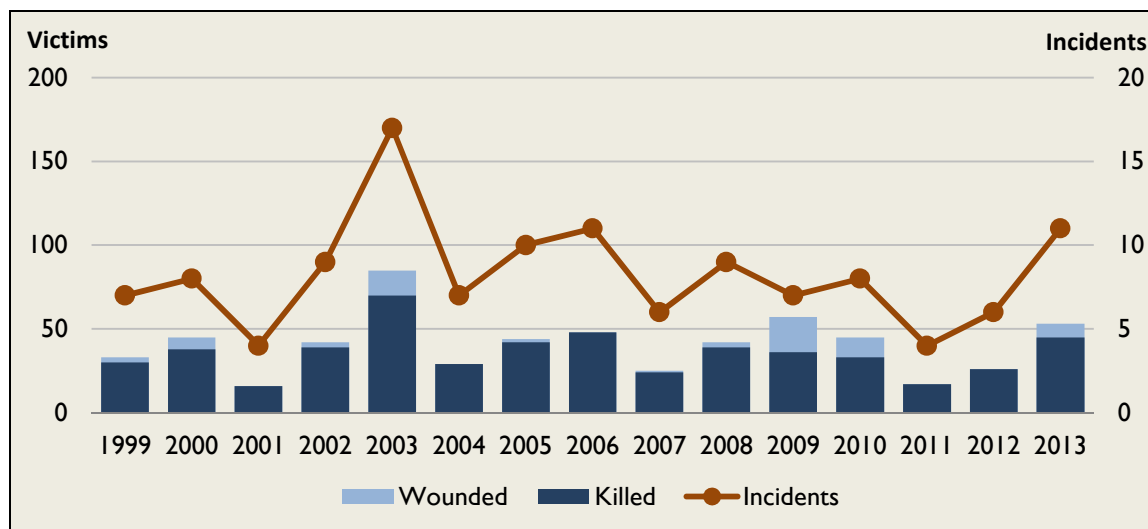
<sup>62</sup> On January 18 and 19, 2013, a 15-year-old male offender murdered four of his family members with a .22 caliber rifle and another, his father, with a semiautomatic AR-15-type rifle in Albuquerque, NM. According to documents charging the offender with murder and child abuse, the offender was “haunted by homicidal and suicidal thoughts that included fantasies of killing his girlfriend’s parents and gunning down random people at a Wal-Mart.” See Matt Pearce, “Nehemiah Griego’s Father Came Home to Family Massacre in New Mexico,” *Los Angeles Times*, January 23, 2013; and Susan Montoya Bryan and Jeri Clausen, “NM Teen Spent Day at Church After Family Slain,” *Associated Press Online*, January 24, 2013.

<sup>63</sup> For further information about state laws addressing firearms and domestic violence, see Shannon Frattaroli and Jan S. Vernick, “Separating Batterers and Guns: A Review and Analysis of Gun Removal Laws in 50 States,” *Evaluation Review*, vol. 30(3), 2006, pp. 296-312.

on average) occurred about twice as frequently as mass public shootings. The average age of the victims killed was 30 years; median, 26; and mode, 23.

**Figure 5. Other Felony Mass Shootings**

(1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Other felony mass shooting” means a multiple victim homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, in one or more locations in close geographical proximity, and the murders are attributable to some other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

Unlike either mass public shootings or familicide mass shootings, as shown in **Table 4**, based on five-year averages, other felony mass shooting incidents and casualty counts generally decreased, with the exception of the wounded counts. The annual incident and casualty counts shown in **Figure 5** and underlying **Table 4** are provided in **Table B-4**.

**Table 4. Other Felony Mass Shootings: Five-Year Annual Averages**

	Incidents	Victims Killed	Victims Wounded	Total Casualties
1999-2003	9.0	38.6	5.6	44.2
2004-2008	8.6	36.4	1.2	37.6
2009-2013	7.2	31.4	8.2	39.6

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Other felony mass shooting” means a multiple victim homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, in one or more locations in close geographical proximity, and the murders are attributable to some other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

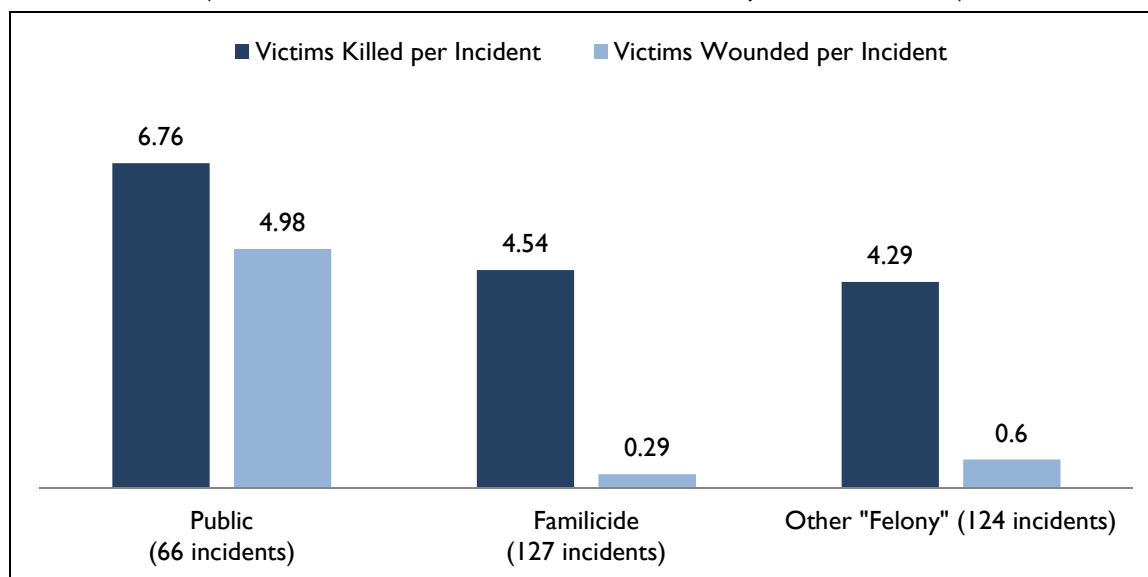
The average age of the offenders was 27.4 years, the median 26, and the mode 24. Seventy-seven of these 124 incidents (62.1%) were drug- or gang-related, and of those incidents, 31 were reportedly home invasions (25.0%). Fifteen were robberies (12.1%). Nine were classic revenge killings (7.3%). The rest ranged from a barroom shootout to courthouse escape. Out of 184 known or suspected offenders, three committed suicide, one was killed in an altercation with the police, and the rest were arrested. Most of those arrested were charged and convicted of murder or lesser crimes for being co-conspirators or accessories. Of these incidents, 40 involved single offenders; 30, two; 15, three; 9 four; 2, five; 1, six; and 1, eleven. Twelve offenders were female (all of them were co-conspirators). In 12 cases, offenders carried and/or used firearms that could be characterized as “assault weapons.” Based on available press accounts, 27 of these incidents remain unsolved.

## Comparative Summary Data and Figures

As shown in **Figure 6** and **Figure 7**, mass public shootings had the highest casualty rates whether killed or wounded per incident or per offender, when compared to familicides and other felony mass shootings. For those cases in which the offenders were identified, approximately half of other felony mass shooting incidents involved multiple offenders. As a result, the casualty rates per offender(s) were lower for other felony mass shootings than for either mass public shootings or familicides. All of the data used to construct the **Figure 6** and **Figure 7** are provided in **Table B-5**.

**Figure 6. Victims per Pattern of Mass Shooting Incident**

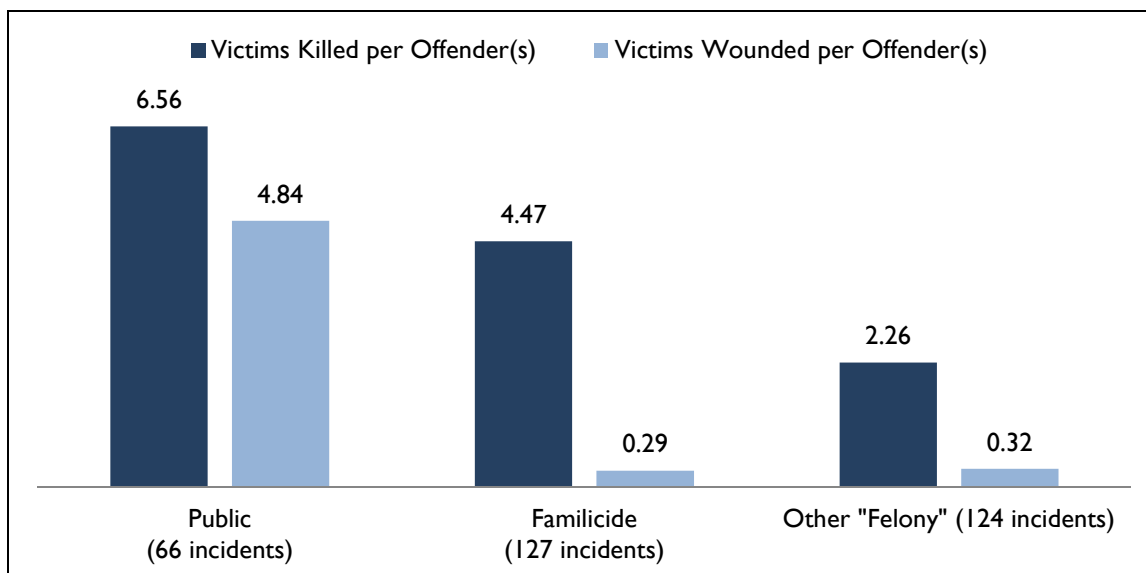
(317 incidents, 1,544 Murdered and 441 Nonfatally Wounded victims)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Figure 7. Victims per Pattern of Mass Shooting Offender**

(At Least 432 Offenders Complicit in 317 Incidents, 1999-2013)



**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

## Prevalence and Deadliness of Mass Public Shootings

Over the past 48 years, as shown in **Table 5**, there have been 13 mass public shooting incidents that resulted in comparatively high casualty rates, or double-digit death tolls (more than nine). Seven of those high-casualty mass shooting incidents occurred in the past seven years, and resulted in over half of the murder victims and nearly half of the wounded associated with those 13 incidents.

**Table 5. Mass Public Shootings with Double-Digit (>9) Death Tolls**

(Killed/Nonfatally Wounded)

Incidents (2007-2013)	Incidents (1966-2006)
2013 Washington Navy Yard (12/3)—workplace	1999 Littleton, CO (13/24)—high school
2012 Newtown, CT (27/2)—elementary school	1991 Killeen, TX (23/27)—other public space
2012 Aurora, CO (12/58)—other public space	1990 Jacksonville, FL (10/17)—public place
2009 Ft. Hood, TX (13/32)—workplace	1986 Edmond, OK (14/6)—workplace
2009 Binghamton, NY (13/4)—other public space	1984 San Ysidro, CA (21/19)—other public space
2009 Geneva County, AL (10/6)—private home and other public spaces (spree killing)	1966 Austin, TX (14/30)—university
2007 Blacksburg, VA (VA Tech) (32/17)—state university	
<b>Total:</b> Seven Years/Seven Incidents: 119 killed, 122 wounded	<b>Total:</b> Thirty-Four Years/Six Incidents: 95 killed, 123 wounded

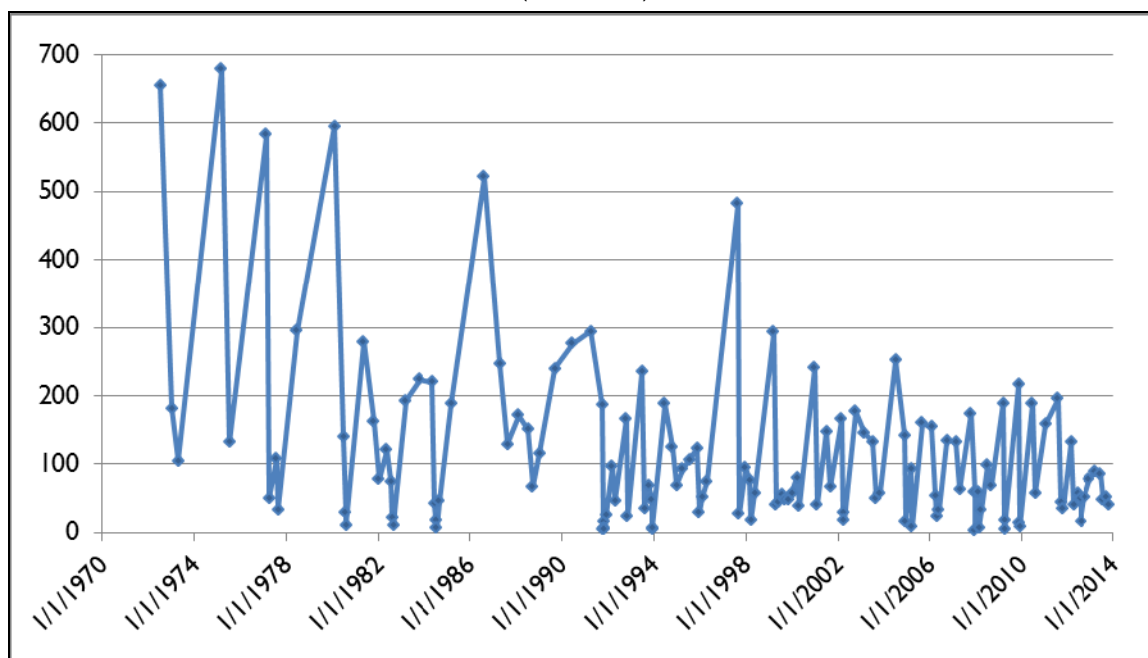
**Source:** Table adapted from James Allen Fox and Jack Levin, *Extreme Killing: Understanding Serial and Mass Murder*, 2<sup>nd</sup> Ed. (Sage Publications, Inc., 2012), p. 230.

**Notes:** Victim counts only include shooting victims. In some cases, additional victims were killed or wounded by means other than a firearm.

Two of those mass public shootings, the December 1992 Newtown, CT, and the April 2007 Blacksburg, VA (Virginia Polytechnic Institute and State University, or VA Tech) mass shootings, resulted in the two highest death tolls in the past half century. By comparison, for the earlier seven-year period (2000-2006), the United States did not suffer any mass shootings resulting in double-digit death tolls. And, over the 34-year period (1966-1999), there were six mass shooting incidents resulting in double-digit death tolls, and those incidents occurred less frequently.

As noted above, the current public understanding generally of what constitutes a mass public shooting was conceptualized arguably by Grant Duwe in his book, *Mass Murder in the United States: A History* (2007), although the term has been defined differently by several researchers.<sup>64</sup> Building upon Duwe's data and analysis, CRS compiled a 44-year dataset of firearms-related mass murders that could arguably be characterized as "mass public shootings." As shown in **Figure 8**, the days between incidents have become fewer over those years and the incidents have become more prevalent. From 2010 through 2013, for example, there were on average 74 days between mass public shooting incidents. For the 2000s, there were 88 days between incidents; for the 1990s, 94 days; for the 1980s, 152 days; and the 1970s, 282 days.

**Figure 8. Days Between Mass Public Shootings**  
(1970-2013)



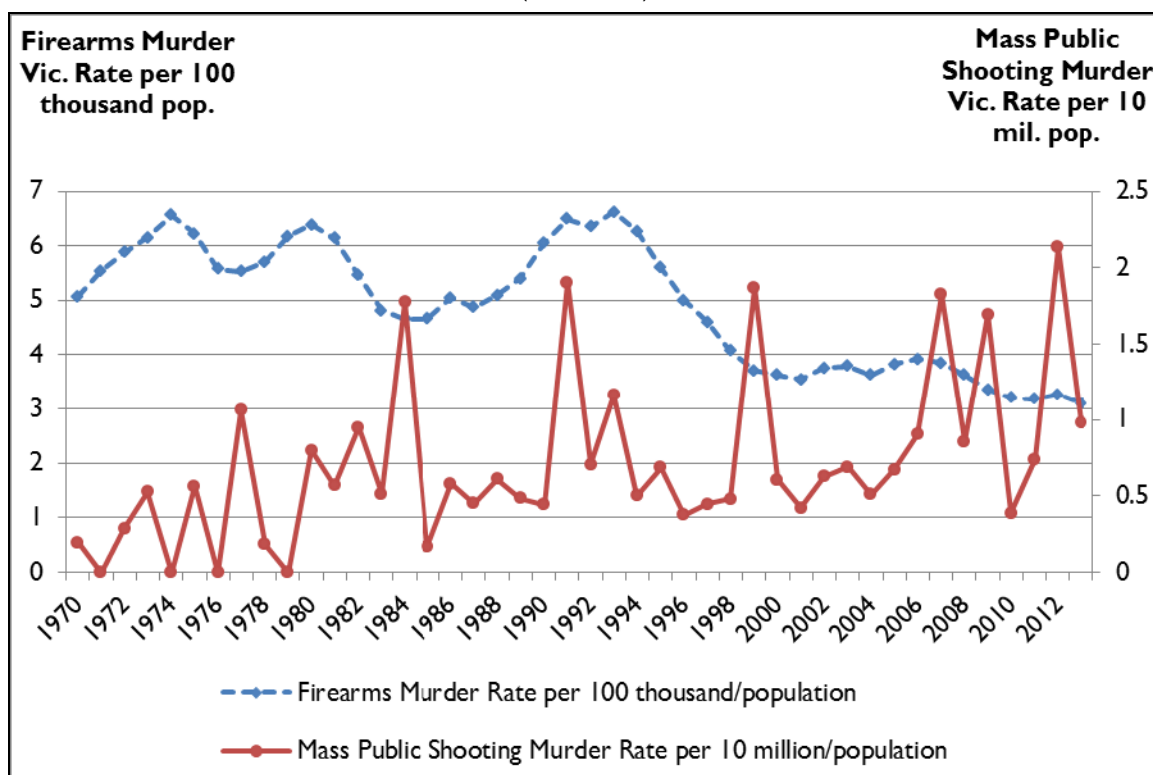
**Source:** CRS analysis of data provided by Grant Duwe for 1970-1998 on mass public shootings, as well as analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups. This analysis is nearly identical to that which first appeared in Amy P. Cohen, Deborah Azrael, and Matthew Miller, "Rate of Mass Shootings Has Tripled Since 2011," Harvard Research

<sup>64</sup> See CRS Report R43004, *Public Mass Shootings in the United States: Selected Implications for Federal Public Health and Safety Policy*, coordinated by Jerome P. Bjelopera.

Shows," *Mother Jones*, October 15, 2014, except that the CRS/Duwe dataset is more comprehensive than the Mother Jones dataset.

As shown in **Figure 9**, the overall firearms-related murder victim rate increased in the 1970s, 1980s, and peaked in 1993. Since then, that murder rate has decreased, fluctuated moderately, or held steady for about the past two decades. From 1993 to 2013, the estimated firearms-related homicide victim rate per one hundred thousand of the population decreased from 6.62 to 3.10. By comparison, it was 5.07 per hundred thousand of the population in 1970 (see the left y-axis for scale). For the same years, the mass public shooting murder victim rate per ten million of the population has trended upward, notwithstanding annual sporadic fluctuations in those murder counts (see the right y-axis for scale). The mass shooting victim rates spiked in several years. For example, it spiked at one victim per 10 million of the population in 1977. It spiked at about one and three-quarter victims per 10 million of the population in 1984, 1991, 1999, 2007, and 2009, largely due to the high casualty incidents listed in **Table 5**. It spiked at over two per ten million of the population in 2012, a rate that principally reflects the victims of the Aurora, CO, and Newtown, CT, mass shootings.

**Figure 9. Firearm Murder and Mass Public Shooting Victim Rates**  
(1970-2013)



**Source:** CRS analysis of data provided by Grant Duwe for 1970-1998 on mass public shootings, as well as analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.



## Possible Issues and Options for Congress

Mass shootings are arguably one of the worst manifestations of gun violence. Public perception of mass public shootings is largely shaped by media accounts.<sup>65</sup> Those accounts often depict mass public shootings as “random” incidents, in which victims are “gunned down indiscriminately.” Leading criminologists, however, have long disputed such characterizations of mass murders as overly simplistic, and have done so in the wake of the Newtown, CT, tragedy.<sup>66</sup> Those criminologists contend strongly that most mass murderers who kill with firearms carefully plan their attacks well in advance, know at least some of their victims, and often select their victims methodically.<sup>67</sup> Those criminologists contend further that while mass murderers are often afflicted with some form of severe emotional duress and mental instability and, consequently, are sometimes delusional, they are rarely psychotic and hallucinatory, and are seldom found to be criminally insane or otherwise unfit to stand trial.<sup>68</sup> In many cases, their mental conditions did not rise to a level such that they would have previously had significant encounters with either the mental health or law enforcement communities.<sup>69</sup> Criminologists have noted, moreover, that after a short period of “moral panic” the national attention that is generated by mass public shootings subsides and the affected communities return to normalcy.<sup>70</sup>

“Familicides,” by comparison, arguably do not garner the same level of media attention or public concern, even though those incidents occur twice as frequently as “mass public shootings.” Advocates for domestic abuse victims have observed that there is often a societal stigma attached to familicides, because the victims are sometimes seen to be indirectly to blame.<sup>71</sup> Instead of the fear, “It could be me,” as is the case in mass public shootings, there appears to be a counter-rationalization, “It would never happen to me.” In some cases, media coverage of familicides is sparse, maybe an article or two in a local paper, often with little or no statewide or national coverage. In addition, there is often little or no opportunity for law enforcement officers to intervene in the actual shootings, because these murders are typically committed late in the night or in the early morning hours in private residences or remote, isolated areas. As discussed below, however, several states have enacted laws to intervene proactively, by taking arguably more concrete steps to remove firearms from the homes of persons with histories of domestic violence.<sup>72</sup>

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<sup>65</sup> Lin Huff-Corzine, et al., “Shooting for Accuracy: Comparing Data Sources on Mass Murder,” *Homicide Studies*, vol. 18(1), 2014, p. 113.

<sup>66</sup> James Alan Fox and Monica J. DeLateur, “Mass Shootings in America: Moving Beyond Newtown,” *Homicide Studies*, December 18, 2013, p. 126, <http://dropbox.curry.com/ShowNotesArchive/2013/12/NA-576-2013-12-22/Assets/War%20on%20Crazy/Homicide%20Studies-2013.pdf>.

<sup>67</sup> Ibid.

<sup>68</sup> Fox and Levin, *Extreme Killing*, 2014, pp. 288-289, and Michael D. Kelleher, *Flash Point: The American Mass Murderer*, Praeger, 1997, pp. 119-121.

<sup>69</sup> Ibid.

<sup>70</sup> Ronald M. Holmes and Stephen T. Holmes, *Mass Murder in the United States*, Prentice Hall, 2001, p. 31. (Hereinafter cited as Holmes and Holmes, *Mass Murder*, 2001.)

<sup>71</sup> B.E. Richie, “Stigma, Stereotypes, and Gender Entrapment: Violence Against Women and Poverty,” *Georgetown Journal on Fighting Poverty*, vol. 3(1), Fall 1995, p. 36.D

<sup>72</sup> Shannon Frattaroli and Jan S. Vernick, “Separating Batterers and Guns: A Review and Analysis of Gun Removal Laws in 50 States,” *Evaluation Review*, vol. 30(3), 2006, pp. 296-312.



By comparison, “other felony mass shootings” generally generate media coverage initially following their discovery, but that attention usually wanes over time, especially when the offenders are not quickly apprehended, arrested, and brought to trial. As described above, a significant percentage of those incidents are drug- or gang-related, or involve persons engaged in other risk-laden, illegal activities. Because of this, there is sometimes little collective sympathy in afflicted communities for the victims. As with “familicides,” there is also often little opportunity for police to intervene in the actual shootings as they occur. Other mass shooting incidents appear to pose a challenge for law enforcement and the judicial system in some communities, as indicated by the possibly 27 unsolved “other felony mass shootings” in the 15-year CRS dataset.

In addition, following any mass shooting, questions are often raised by the media, gun control advocates, and gun rights defenders, but seldom answered definitively and officially. Among those questions, the six most frequently asked include

- How did the offenders get their guns, legally or illegally?
- Did the offenders have a history of violence and/or mental illness?
- How many and what types of guns were carried and used?
- Did the gun types lead to higher victim counts in terms of both killed and wounded?
- Did the offenders hold valid, state-issued concealed carry permits and, if so, was concealed carry a factor in shootings?
- Did the shootings occur in designated “gun free zones”?

Questions such as these, if answered comprehensively and in a longitudinal fashion, could arguably inform the policymaking process, as well as provide first responders with valuable criminal intelligence. Toward those ends, several gun control issues related to mass shootings are discussed below.

## **Mass Killings, Mass Murder, Mass Shooting, and Related Definitions**

Following the Newtown, CT, mass shooting, Congress passed legislation that statutorily defines the term “mass killings” as “3 or more killings in a single incident.”<sup>73</sup> This act essentially authorizes the Attorney General and FBI Director, at the request of a state or local law enforcement official, to assist in the investigation of violent acts, including mass killings and attempted mass killings in schools, malls, or other public places and non-federal office buildings. The term “mass killings” as defined in this act with its three-victim threshold differs with previous FBI guidance on homicide types, and with the prior general practice of enumerating what constitutes “mass murder.” As discussed previously, a mass murder has been defined generally as a multiple homicide incident in which four or more victims are murdered—not including the offender(s)—within one event, and in one or more geographical locations relatively near one another.

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<sup>73</sup> Investigative Assistance for Violent Crimes Act of 2012 (P.L. 112-265; January 14, 2013; 126 Stat. 2435).

Given its definition of “mass killings” in P.L. 112-265, and as one step towards establishing a comprehensive statistical baseline in the future, Congress might want to consider whether it would be beneficial for the FBI or other governmental agency to provide a consistent, complementary set of definitions for terms like “mass murder,” “mass shooting,” and “mass public shooting,” so that such terminology is not conflated with terms like “active shooter,” “mass killing,” or “mass casualty event.” Several researchers have called for the development of a consensus definition for mass shootings, as one step towards stimulating and funding “epidemiologic research on this phenomenon.”<sup>74</sup>

## Federal Statistics and Mass Shootings

So far, with the exception of BJS, no federal agency has systematically analyzed multiple victim homicide incidents involving firearms in a comprehensive, authoritative manner. Yet the FBI-compiled Uniform Crime Reports (UCR) and its complementary Supplementary Homicide Reports (SHR) program provide the single, authoritative source of data on multiple victim homicides from which valid, academically peer-reviewed statistical baselines can, and have been, established by a handful of researchers. Nonetheless, the UCR-SHR data are fraught with several serious shortcomings, which could be alleviated if state and local law enforcement agencies reported data more regularly, and the FBI took additional steps to ensure the data were collected with greater accuracy. (See **Appendix A**, footnote 95.)

In addition to the FBI’s UCR-SHR program, the Department of Health and Human Services’ Centers for Disease Control and Prevention (CDC) also maintain a database on mortality and morbidity in the United States, including firearms-related homicides, suicides, and accidents. However, the CDC datasets are not published on as timely a basis as the UCR-SHR datasets; for any given year, the CDC data releases usually lag behind the FBI UCR-SHR data releases by a couple of years. Furthermore, the CDC datasets only include data on multiple victim homicides for those incidents that the FBI investigates as “international terrorist incidents.”<sup>75</sup>

In short, to provide an improved statistical baseline on mass murder and gun violence, Congress could examine possibilities of future improvements to both the CDC and FBI datasets, as a means of making both datasets more comprehensive, compatible, and complementary.

## Legal or Illegal Firearms Acquisition

Following any firearms-related multiple homicide, one of the questions that nearly always arises is, “How did the offender acquire his gun(s), legally or illegally?” This is a question that sometimes can be answered by federal authorities. The DOJ’s Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) administers a regulatory framework of recordkeeping under both the Gun Control Act of 1968 (18 U.S.C. Chapter 44, §921 et seq.) and the National Firearms Act of 1934 (26 U.S.C. §5801 et seq.) that often allows federal agents to trace a firearm from a federally licensed manufacturer or importer of that firearm to the first retail purchaser, and

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<sup>74</sup> James M. Shultz, Siri Thoresen, Brian W. Flynn, Glenn W. Muschert, Jon A. Shaw, Zelde Espinel, Frank G. Walter, Joshua B. Gaither, Yanira Garcia Barcena, Kaitlin O’Keefe, and Alyssa M. Cohen, “Multiple Vantage Points on Mental Health Effects of Mass Shootings,” *Current Psychiatry Report* (2014) 16:469, p. 14.

<sup>75</sup> U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *The Nation’s Two Measures of Homicide*, July 2014, NCG 247060, <http://www.bjs.gov/content/pub/pdf/ntmh.pdf>.

possibly to the offender. In this way, the legality of the transfers in a firearm's chain of commerce can sometimes be established.

The release of raw, unfiltered firearms trace data to the public, however, is fraught with controversy, especially when the identities of federally licensed gun dealers who might not have broken any law are released.<sup>76</sup> On the other hand, knowing whether the offenders acquired their firearms legally or illegally would arguably inform the gun control debate. For example, if a majority of offenders who kill with firearms acquired those weapons legally, then a stronger argument possibly could be made for better recordkeeping on persons who are legally disqualified from being transferred a firearm for reasons of domestic violence or other documented violent behavior, among other possible changes in federal and state law. According to some assessments, however, it appears that some mass murders had little or no prior interaction with the mental health community, nor did they always have criminal history records.<sup>77</sup> While this could be said for some mass public shooting offenders, this observation is probably less valid for other felony and familicide mass shooting offenders.

Similarly, if a significant percentage of those offenders acquired those firearms from unlicensed persons, a stronger argument could be made for requiring "universal background checks," a proposal under which all firearms transfers would have to be made through a federally licensed gun dealer to ensure that a federal name-based background check would be conducted on all potential unlicensed firearms buyers, no matter whether the seller was a licensed dealer or unlicensed, private person. Opponents of universal background checks would possibly counter that offenders would manage to acquire a firearm through a "straw purchase" or some other illegal avenue.<sup>78</sup>

Nevertheless, such data on legality of such transfers, if collected comprehensively and without bias, could be released by ATF without compromising the identities of federally licensed gun dealers, who might have simply had the misfortune to transfer a firearm according to the law, but to a murderer. If a federally licensed gun dealer or unlicensed, private person transferred a firearm to a mass shooter illegally, it is likely he would be prosecuted to the fullest extent of the law.

Along these lines, Congress could consider requiring ATF to reach out affirmatively to offer assistance to any state or local law enforcement agency investigating any multiple victim

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<sup>76</sup> For FY2004 and every year thereafter, Congress has included a proviso in the ATF salaries and expenses appropriations language that is known for its original sponsor, Representative Todd Tiahrt. This proviso prohibits ATF from using appropriated funding to make unfiltered trace data available to any parties other than domestic and foreign law enforcement (with greater restrictions in the latter case) and national security agencies. The language of the proviso exempts trace reports, which ATF has traditionally produced for statistical purposes and firearms trafficking trend analysis. For FY2012, Congress included "futility language" ("in the current fiscal year and in each fiscal year thereafter") in this rider, which appears to be intended to make it permanent law. See Consolidated and Further Continuing Appropriations Act, 2012; P.L. 112-55; November 18, 2011, 125 Stat. 552, 609-610; 18 U.S.C. 923 note.

<sup>77</sup> James Alan Fox, "Top Ten Myths About Mass Shootings," *Boston.com*, [http://www.boston.com/community/blogs/crime\\_punishment/2012/12/top\\_10\\_myths\\_about\\_mass\\_shooti.html](http://www.boston.com/community/blogs/crime_punishment/2012/12/top_10_myths_about_mass_shooti.html).

<sup>78</sup> A "straw purchase" occurs when an individual poses as the actual transferee, but he is actually acquiring the firearm for another person. In effect, he serves as an illegal middleman. As part of any firearms transfer from a federally licensed gun dealer to a private person, the GCA requires them to fill out jointly an ATF Form 4473. In addition, the gun dealer is required to verify the purchaser's name, address, date of birth, and other information by examining a government-issued piece of identification, most often a driver's license. Among other things, the purchaser attests on the ATF Form 4473 that he is not a prohibited person, and that he is the "actual transferee/buyer." Hence, straw purchases are known as "lying and buying for the other guy." Straw purchases are illegal under two provisions of the GCA (18 U.S.C. §§ 922(a)(2) and 924(a)(1)(D)).

homicide, no matter the circumstances, by offering to trace any firearms used in those incidents. Based on that assistance, Congress could also consider directing BJS and ATF to report formally to Congress about the frequency and deadliness of multiple victim homicides, and how the offenders acquired those firearms used in those incidents, especially for mass murders. ATF would arguably also be well positioned to report to Congress on arson- and explosives-related mass murders.

## **Types of Firearms Used in Mass Shootings**

Many observers agree that a rash of “mass public shootings” in the 1980s and early 1990s was a contributing factor that led to the enactment of a 10-year (1994-2004) federal ban on “semiautomatic assault weapons” that placed restrictions on certain “military style” firearms capable of accepting “detachable magazines,” a capability that arguably allows some firearms to be re-loaded more rapidly and fired more rapidly. As noted above between 1999 and 2013:

- In “mass public shootings,” offenders used firearms that could be characterized as “assault weapons” in 18 of 66 incidents (27.3%).
- In one “familicide mass shooting,” an offender used a firearm that could be characterized as an “assault weapon,” with which he murdered one of his four victims, his father.
- In 12 “other felony mass shootings,” offenders carried and/or used firearms that could be characterized as “assault weapons” (9.7%).

In summation, out of 317 “mass shootings,” offenders used firearms that could be characterized as “assault weapons” in 31 incidents (9.78%), or roughly 1 out of 10 incidents. In some, but not all, of these incidents, the capabilities of these firearms arguably led to higher victim counts in terms of both killed and wounded. In other incidents, however, like the familicide described above, the fact that the firearm used to kill one of the victims could be characterized as an “assault weapon,” does not arguably inform the gun control debate a great deal, because the offender did not fire multiple rounds with that firearm to murder multiple victims, nor did he reload.

If an authoritative and comprehensive dataset of types of firearms used, numbers of shots fired, and reloads made in mass shooting incidents could be established, Congress and other policymakers would arguably have an improved basis from which to assess proposals regarding the capacity of detachable magazines and semiautomatic firearms capable of accepting those magazines.

## **Domestic Violence and Mass Shootings**

A domestic dispute of some sort was allegedly a contributing factor in about a fifth of mass public shootings and arguably nearly all of the familicide mass shootings. In some cases, offenders were able to purchase a firearm, or allowed to keep firearms already in their possession, and commit mass murder, even though they had previously had domestic violence restraining orders filed against them, or had been convicted of misdemeanor domestic violence offenses, both prohibiting factors under federal law with regard to firearms possession and transfer. Such scenarios have

prompted some states to increase the longevity of domestic violence restraining orders.<sup>79</sup> These scenarios have also prompted other states to require judges and magistrates issuing domestic violence restraining orders to communicate affirmatively to the subject of a restraining order that if he or she possesses any firearms, they are henceforward, for the life of that restraining order, in illegal possession of those firearms and in violation of federal law.<sup>80</sup> Hence, they must at least temporarily surrender constructive possession of their firearms to a neutral third party. Other states require the subjects of those restraining orders to actually surrender any firearms that they possess to the authorities for the life of that restraining order. The laws in other states remain silent on such matters, according to a 2006 report.<sup>81</sup> As several researchers underscored, the expectation that subjects of restraining orders voluntarily relinquish their firearms is a potentially problematic aspect of both federal and state law.<sup>82</sup>

With regard to such matters, Congress could consider directing the Attorney General to establish guidelines for the handling of such matters at the state and local level. Congress might also want to consider revisiting the NICS Improvement Amendments Act of 2007 (P.L. 110-180) to explore possibilities to address the issues related to improving electronic information sharing on persons with documented histories of domestic violence with the FBI for the purposes of gun control.

## Mental Illness and Mass Shootings

Most mass murderers arguably suffered from some form of mental instability, at least temporarily.<sup>83</sup> Many offenders, however, who manage to shoot to death four or more victims are not psychotic or hallucinatory; consequently, they often have not had significant interaction with either the mental health or law enforcement community.<sup>84</sup> Nonetheless, following mass shootings, policymakers often propose providing increased funding to bolster a federally maintained computer file in the National Instant Criminal History Background Check System, in which the FBI maintains records on persons who are considered “mentally defective,” or too “mentally incompetent” or “mentally unstable” to be trusted with firearms. Prior to the enactment of the Brady Handgun Violence Prevention Act (Brady Act, P.L. 103-159), however, the United States collectively saw no reason to establish a paper record system or electronic database of persons who were too “mentally incompetent” for gun control or any other purpose.

Conversely, prior to the Brady Act, the federal government and the states (largely facilitated by the FBI) had collectively built a federated system, which in the 1970s was computerized and

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<sup>79</sup> Legal Community Against Violence, *Regulating Guns in America: An Evaluation and Comprehensive Analysis of Federal, State and Selected Local Gun Laws* (2008), pp. 88-103.

<sup>80</sup> Ibid.

<sup>81</sup> Shannon Frattaroli and Jon S. Vernick, “Separating Batterers and Guns: A Review and Analysis of Gun Removal Laws in 50 States,” *Evaluation Review* (June 2006), pp. 296-312.

<sup>82</sup> Emily Rothman, Renee M. Johnson, and David Hemenway, “Gun Possession Among Massachusetts Batterer Intervention Program Enrollees,” *Evaluation Review*, vol. 30, no. 3, June 2006, p. 284.

<sup>83</sup> Adam Lankford, *The Myth of Martyrdom: What Really Drives Suicide Bombers, Rampage Shooters, and Other Self-Destructive Killers*, Palgrave Macmillan, 2013, pp. 107-126. Katherine Ramsland, *Inside the Minds of Mass Murderers: Why They Kill*, Praeger Publishers, 2005, pp. 145-146.

<sup>84</sup> Jennifer Skeem, Patrick Kennedy, John Monahan, Jillian Peterson, and Paul Appelbaum, “Psychosis Uncommonly and Inconsistently Precedes Violence Among High-Risk Individuals,” *Clinical Psychological Science*, vol. 1-10, 2015, p. 4; cited in Yasmin Anwar, “Psychotic Hallucinations, Delusions Rarely Precede Violence,” *Psychology and Psychiatry*, May 12, 2015, <http://medicalxpress.com/news/2015-05-psychotic-hallucinations-delusions-rarely-violence.html>.



linked telephonically, to share mostly serious felony-level criminal history record information (“rap sheets”). This federated computer record system is the Interstate Identification Index (III). While the number and quality of records in the III needed to be improved substantially to meet the objectives of the Brady Act, without it, the Brady Act would have largely been unfeasible.

At the same time, the Brady Act created a statutory impetus to develop a parallel computer system and databases for persons who authorities considered to be too mentally unstable to be trusted with a firearm, as well as computer files on drug addicts and abusers. To implement this part of the Brady Act, federal authorities are dependent upon the state authorities to gather and provide those records electronically to the FBI. While some states that had required computerized, firearms-related background checks prior to the Brady Act had begun to establish such record systems, some states had not and still have not established such systems. Because the impetus was top-down and not bottom-up, or grass roots, the onus was arguably on the federal government to lead a nationwide dialogue and build a national consensus with regard to the scope, reach, and maintenance of such record systems.

At the federal level, such a dialogue was held administratively among federal agencies. In 1997, the ATF, in consultation with other federal agencies, established a regulatory definition of “adjudicated mental defective” as one step towards the implementation of the Brady Act, which required federal background checks on unlicensed persons seeking to acquire firearms from federally licensed firearms dealers.<sup>85</sup> According to DOJ, however, some states have chosen not to provide the FBI with any records on persons who would fall under ATF’s definition of “adjudicated mental defective,” even when they have been:<sup>86</sup>

- found to pose a danger to themselves or others following a court-ordered psychiatric evaluation;
- committed to a mental institution;<sup>87</sup> or
- found to be criminally insane.

Before the Newtown, CT, mass shooting, federal courts did not provide records to the FBI on persons who had been found to be criminally insane, though those persons fell under the ATF definition of “adjudicated mental defective.” While this oversight has reportedly been addressed

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<sup>85</sup> Under 27 C.F.R. §478.11, the term “adjudicated as a mental defective” is defined to include a determination by a court, board, commission, or other lawful authority that a person, as a result of marked subnormal intelligence or a mental illness, incompetency, condition, or disease, (1) is a danger to himself or others, or (2) lacks the mental capacity to manage his own affairs. The term also includes (1) a finding of insanity by a court in a criminal case and (2) those persons found incompetent to stand trial or found not guilty by reason of lack of mental responsibility pursuant to articles 50a and 72b of the Uniform Code of Military Justice, 10 U.S.C. Sections 850a, 876(b).

This definition was promulgated by an ATF final rule (*Federal Register*, vol. 62, no. 124, June 27, 1997, p. 34634).

<sup>86</sup> U.S. Department of Justice, *Report to Congress Pursuant to Requirements of the NICS Improvement Amendments Act of 2007 (P.L. 110-180)*, July 1, 2010.

<sup>87</sup> Under current federal law, the term “committed to a mental institution” does not include voluntary admissions and would not apply to individuals voluntarily seeking treatment for CRS Report R43040, *Submission of Mental Health Records to NICS and the HIPAA Privacy Rule*, coordinated by Edward C. Liu. Following the 2012 Newtown, CT, tragedy, several states changed laws related to involuntary commitments and mandatory reporting. Jessica Rosenberg, “Mass Shootings and Mental Health Policy,” *Journal of Sociology & Social Welfare*, March 2014, vol. XLI, no. 1, p.10114.

by the Executive Office of the U.S. Attorneys and Administrative Office of the U.S. Courts, it may still warrant congressional attention.<sup>88</sup>

On the other hand, since 1998, the Department of Veterans Affairs (VA) has transferred to the FBI electronic records on any VA beneficiary who is found to be too mentally incompetent to handle his or her day-to-day affairs, prompting Congress to create an administrative appeals process so that those VA beneficiaries can petition to have their gun rights restored. In addition, as a condition of federal aid under the NICS Improvement Amendments Act of 2007 (P.L. 110-180), Congress requires that states establish similar administrative appeals processes. In some cases, the costliness of these appeals processes has prompted some states to forgo applying for federal grants under the act.<sup>89</sup> Meanwhile, Congress maintains a rider on the ATF annual appropriations, prohibiting that agency from considering any disabilities relief applications under federal statute from any other person ineligible to possess for any reason, because gun privileges had been restored to persons with criminal histories, some of whom later went on to commit subsequent crimes, and also for cost-saving purposes.<sup>90</sup>

The range of “mentally incompetent” or “mentally unstable” persons who could potentially fall under the ATF definition of “adjudicated mental defective” is wide in scope and will likely be costly to realize. Congress has already provided state and local governments with hundreds of millions of dollars to improve the accuracy and electronic access to disqualifying records for the purposes of gun control.<sup>91</sup> While the focus of those efforts initially was on felony-level criminal records, over the years resources have been increasingly devoted to determinations of mental incompetency, misdemeanor domestic violence convictions, and misdemeanor domestic violence restraining orders.

The maintenance of these records has considerable implications for the individuals who are the subjects of those records. It also has costs, not only to the federal government, but state and local governments, and possibly mental health care providers as well.<sup>92</sup> To ensure that at some point in the future such funding is provided and expended in the most efficacious manner possible, Congress could consider the scope of the federal definition of “adjudicated mental defective” and

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<sup>88</sup> Phone conversation with Administrative Office of the United States Courts, Office of Legislative Affairs on February 15, 2015.

<sup>89</sup> “The limited amount of NIAA grant funds appropriated so far may, in some cases, have caused states to abstain from pursuing a relief from disabilities program based upon a simple cost-benefit analysis.” U.S. Department of Justice, *Report to Congress Pursuant to Requirements of the NICS Improvement Amendments Act of 2007 (P.L. 110-180)*, June 1, 2012, p. 14.

<sup>90</sup> For FY1993 and every year thereafter, Congress has included a proviso in the ATF S&E appropriations language that prevents that agency from using appropriated funds to consider applications for disabilities relief (i.e., reinstatement of an applicant’s right to gun ownership under 18 U.S.C. §925(c)) from individuals who are otherwise ineligible to be transferred a firearm.

<sup>91</sup> Under the National Criminal History Improvement Program (NCHIP), which was originally authorized under the Brady Act, Congress has appropriated nearly \$563 million to provide states with grants to improve criminal history recordkeeping. Similarly, for programs authorized under the 2007 NICS Improvement Amendments Act (P.L. 110-180), Congress has appropriated nearly \$64 million to provide states and tribal governments with grants to improve mental health and criminal history recordkeeping on persons who are deemed to be either “mentally defective” or committed to a mental institution, convicted of a domestic violence misdemeanor, or subject to a domestic violence restraining order.

<sup>92</sup> Jonathan M. Metzl and Kenneth T. MacLeish, “Mental Illness, Mass Shootings, and the Politics of American Firearms,” *American Journal of Public Health*, February 2015, vol. 105(2), p. 247; cited in Yasmin Anwar, “Psychotic Hallucinations, Delusions Rarely Precede Violence,” *Psychology and Psychiatry*, May 12, 2015, <http://medicalxpress.com/news/2015-05-psychotic-hallucinations-delusions-rarely-violence.html>.

what a national database of “mentally incompetent and unstable” individuals means to the United States for the purposes of gun control. The current definition of “mental defective” is wide enough in scope that it may be many years, or perhaps never at all, before a significant percentage of records on all the persons who potentially fall under the current definition of “adjudicated mental defective” are comprehensively collected and placed in a database for the purposes of federal gun control.<sup>93</sup> Congress might also want to consider revisiting the NICS Improvement Amendments Act of 2007 (P.L. 110-180) to explore possibilities to address issues related to improving the electronic information sharing on persons with histories of mental illness and instability, as well as drug and alcohol abuse, with the FBI for the purposes of gun control.<sup>94</sup>

## Other Felony Mass Shootings and Unsolved Mass Murder Cases

A significant percentage, more than a fifth, of “other felony mass shootings” appears to remain unsolved. As demonstrated above, for “other felony mass shootings,” 27 of 124 cases were unsolved according to available press accounts. While that represents a clearance rate of nearly four-fifths of those incidents (78.2%), it could be a source of concern for some policymakers that quadruple or greater homicides—particularly mass shootings—in any community in the United States could remain unsolved. As the data show, a large percentage of those incidents were drug- and/or gang-related and often occurred in communities blighted by high poverty and other social ills. As one of the worst manifestations of gun violence, Congress could explore the reasons why these “mass shootings” remain possibly unsolved. Is it a lack of resources and/or ineffective policing? Are witnesses and others with knowledge of these murders afraid to come forward, for fear that criminals will retaliate against them and their families? Are these unsolved “mass shootings” indicative of communities whose trust in the police has become so diminished over the years that those communities collectively show greater affinity with the murderers than the police? While there are no clear answers to these questions, multiple victim homicide rates and unsolved “mass shootings” could possibly be one factor that could help policymakers more effectively target federal law enforcement assistance and intervention into high-crime areas.

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<sup>93</sup> One observer stated: “If you focus on mental illness, all you get is a huge number of false positives.” See John Nicoletti, “Active Shooters See Themselves As Avengers, Acting Upon a Real or Perceived Injustice,” in *Police Response to Active Shooter Incidents* (Police Executive Research Forum, March 2014), p. 29.

<sup>94</sup> For further information about proposals to expand firearms ineligibility criteria, see Consortium for Risk-Based Firearm Policy, *Guns, Public Health, and Mental Illness: An Evidence-Based Approach for Federal Policy*, December 11, 2013, 38 pp.



## Appendix A. Review of Research on the Prevalence of Multiple Homicides, Mass Murder, and Patterns of Mass Murder

A handful of criminologists, statisticians, sociologists, and journalists have evaluated the single, most comprehensive source of homicide data in the United States as a means to gauge the frequency and deadliness of multiple victim homicides and “mass murder” committed with firearms and other weapons.

### Bureau of Justice Statistics Estimates of Multiple Victim Homicides

Based on its analysis of the FBI-SHR data, the DOJ Bureau of Justice Statistics (BJS) has provided CRS with data on the prevalence of multiple victim homicide incidents (by firearms and all other means) and associated murder victim counts for the years 1980 through 2011. To keep BJS data parallel with CRS data presented in this report, the BJS data presented and discussed in the next two tables (and figures) below are only for 1999 to 2011. It is significant to note that BJS statistically weighted its estimates to account for non-reporting and other known Supplementary Homicide Report (SHR) data limitations.<sup>95</sup>

**Table A-1. BJS-Estimated Single, Double, Triple, or Four or More Victim Homicide Incidents**

13-Year Period, 1999 to 2011

Year	All Homicide Incidents <sup>a</sup>	Single Victim	% of total	Double Victim	% of total	Triple Victim	% of total	Four or More Victim	% of total
1999	14,682	14,022	95.51%	550	3.75%	72	0.49%	37	0.26%
2000	14,850	14,250	95.96%	504	3.39%	70	0.47%	26	0.18%

<sup>95</sup> The SHR are beset with several significant data limitations with regard to multiple victim homicides. First and foremost, some states and localities do not participate, do not participate fully, or participate intermittently in the SHR program. Second, federal and tribal law enforcement agencies do not participate at all in the SHR program. Third, the FBI does not exercise direct control over how data are submitted. As a result, some potential difficulties in evaluating SHR data include

- Several single victim murder incidents might be reported on the same form; hence, they appear to be a multiple murder incident;
- A single multiple homicide incident might be reported as several incidents, one for each victim; or
- A single incident might be reported as a multiple homicide, because wounded were misreported as killed.

Fourth, incidents are reported by month and year, and not the actual day of occurrence. Consequently, the recorded month and year sometimes reflect when the incident was reported and not when it actually occurred. Fifth, in some, but not all, cases, the SHR data do not reflect the final disposition of the case, since the reports are based on the opening of an investigation and do not necessarily reflect the closing of an investigation and final legal action (e.g., trial and conviction).

Year	All Homicide Incidents <sup>a</sup>	Single Victim	% of total	Double Victim	% of total	Triple Victim	% of total	Four or More Victim	% of total
2001	15,233	14,561	95.59%	571	3.75%	81	0.53%	20	0.13%
2002	15,340	14,630	95.38%	582	3.80%	93	0.60%	34	0.22%
2003	15,554	14,805	95.18%	612	3.94%	91	0.58%	46	0.30%
2004	15,331	14,666	95.66%	563	3.67%	72	0.47%	30	0.19%
2005	15,855	15,135	95.46%	596	3.76%	98	0.62%	26	0.17%
2006	16,384	15,656	95.56%	598	3.65%	89	0.54%	41	0.25%
2007	16,234	15,524	95.62%	596	3.67%	84	0.52%	30	0.19%
2008	15,577	14,872	95.47%	583	3.74%	86	0.55%	37	0.24%
2009	14,498	13,776	95.02%	613	4.23%	72	0.50%	37	0.25%
2010	13,910	13,250	95.25%	552	3.97%	80	0.58%	28	0.20%
2011	13,743	13,048	94.94%	564	4.10%	108	0.78%	24	0.17%
Totals <sup>b</sup>	197,191	188,195	95.44%	7484	3.80%	1096	0.56%	416	0.21%

**Source:** U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

**Notes:** The figures in this table are not actual incident counts. They are statistical estimates based upon Bureau of Justice Statistics analysis of Federal Bureau of Investigation (FBI) Supplementary Homicide Reports.

a. "All homicide incidents" include "murders and nonnegligent manslaughter."

b. Totals may differ from the sum of the components due to rounding.

As shown in **Table A-1**, for that decade, it can be extrapolated that there were on average approximately 32 four or more victim homicides per year from 1999 to 2011. Those four or more victim homicides accounted for about two-tenths of one percent (0.21%) of all incidents of murder and nonnegligent manslaughter for that decade.

**Table A-2. BJS-Estimated Single, Double, Triple, Four or More Homicide Victims**

13-Year Period, 1999 to 2011

Year	All Homicide Victims <sup>a</sup>	Single Victim	% of total	Double Victim	% of total	Triple Victim	% of total	Four or More Victim	% of total
1999	15,522	14,022	90.34%	1,100	7.09%	217	1.40%	183	1.18%
2000	15,586	14,250	91.43%	1,007	6.46%	209	1.34%	119	0.77%

Year	All Homicide Victims <sup>a</sup>	Single Victim	% of total	Double Victim	% of total	Triple Victim	% of total	Four or More Victim	% of total
2001	16,037	14,561	90.79%	1,142	7.12%	244	1.52%	90	0.56%
2002	16,229	14,630	90.15%	1,165	7.18%	278	1.71%	156	0.96%
2003	16,528	14,805	89.57%	1,224	7.41%	272	1.65%	226	1.37%
2004	16,148	14,666	90.82%	1,127	6.98%	216	1.34%	140	0.87%
2005	16,740	15,135	90.41%	1,192	7.12%	294	1.75%	120	0.71%
2006	17,309	15,656	90.45%	1,195	6.90%	266	1.54%	191	1.10%
2007	17,128	15,524	90.63%	1,191	6.96%	253	1.48%	160	0.93%
2008	16,465	14,872	90.32%	1,165	7.08%	257	1.56%	171	1.04%
2009	15,399	13,776	89.46%	1,226	7.96%	217	1.41%	180	1.17%
2010	14,722	13,250	90.00%	1,105	7.50%	240	1.63%	127	0.86%
2011	14,612	13,048	89.30%	1,128	7.72%	323	2.21%	114	0.78%
<b>Totals<sup>b</sup></b>	<b>208,425</b>	<b>188,195</b>	<b>90.29%</b>	<b>14,967</b>	<b>7.18%</b>	<b>3286</b>	<b>1.58%</b>	<b>1977</b>	<b>0.95%</b>

**Source:** U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

**Notes:** The figures in this table are not actual victim counts. They are statistical estimates based upon Bureau of Justice Statistics analysis of Federal Bureau of Investigation (FBI) Supplementary Homicide Reports.

a. "All homicide victims" include victims of "murders and nonnegligent manslaughter."

b. Totals may differ from the sum of the components due to rounding.

Correspondingly, as shown in **Table A-2**, for that 13-year period it can be extrapolated that there were on average approximately 152 murder victims per year associated with those four or more victim homicides, or about 4.75 victims per incident. Those victims accounted for 1.58% of all homicide victims for that 13-year period, which is an increase of less than one percent for the 32-year period (1980-2011). It is worth noting that, in addition to being mass murders, some of those four or more victim homicide incidents were "serial murders" and "spree murders" that extended past one event, or roughly 24 hours in the case of some spree murders.

For 2011, BJS estimated that about two-thirds (67.1%) of all homicides involved firearms, and about half (49.4%) of all homicides involved handguns.<sup>96</sup> Consequently, about one-sixth (17.7%) of murders involved firearms other than handguns. In addition, the percentage of murders committed with firearms increased for multiple victim homicides over similar homicides committed by some other means (e.g., stabbing, strangulation, bludgeoning, or arson). For example, for 2011, BJS estimated that about two-thirds (66.5%) of single victim homicides, more than three-quarters (77.3%) of double victim homicides, more than four-fifths (82.3%) of triple victim homicides, and more than nine-tenths (90.8%) of four or more victim homicides (possibly mass murders) involved at least some firearms.<sup>97</sup>

<sup>96</sup> U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Homicide in the U.S. Known to Law Enforcement*, 2011, December 2013, NCJ 243055, by Erica L. Smith and Alexia Cooper, p. 14.

<sup>97</sup> Ibid.

For 2011, BJS estimated further that the percentage of multiple victim homicide incidents committed with rifles<sup>98</sup> or shotguns<sup>99</sup> (long guns), as opposed to handguns,<sup>100</sup> increased significantly as well. For that year, about one-quarter (25.3%) of double homicides, more than one-third (35.2%) of triple homicides, and nearly one-half (46.6%) of four or more victim homicides were committed with firearms other than a handgun.<sup>101</sup>

According to BJS, multiple murders and nonnegligent manslaughter incidents, in which an offender or offenders killed four or more victims, are arguably statistically infrequent, notwithstanding the trauma inflicted on the victims, their families, and society as a whole. Over the 13-year period (1999-2011), there were 416 such incidents, in which 1,977 victims perished. In other words, those incidents accounted for about two-tenths of a percent (0.21%) of all BJS-reported murders and nonnegligent manslaughter incidents, or about 32.0 incidents per year on average.<sup>102</sup> Murder victims in those incidents accounted for almost one percent (0.95%) of all BJS-reported murder and nonnegligent manslaughter victims, or 152 victims per year on average.<sup>103</sup> **Figure 1** demonstrates both the number of incidents and the number of victims attributable to multiple murder and nonnegligent manslaughter.

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<sup>98</sup> *Rifle* means a weapon designed to be fired from the shoulder that uses the energy of an explosive to fire only a single projectile through a rifled bore for each single pull of the trigger (18 U.S.C. §921(a)(7)).

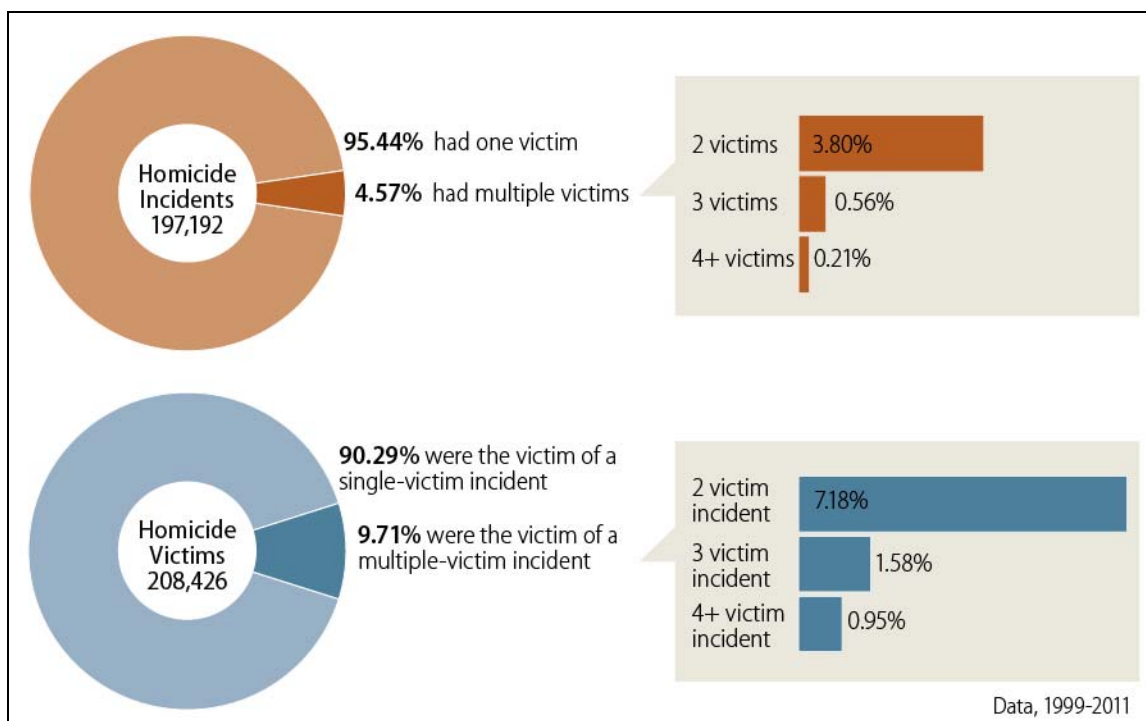
<sup>99</sup> *Shotgun* means a weapon designed to be fired from the shoulder that uses the energy of an explosive to fire through a smooth bore either a number of ball shot or a single projectile for each single pull of the trigger (18 U.S.C. §921(a)(5)).

<sup>100</sup> *Handgun* means (a) any firearm that has a short stock and is designed to be held and fired by the use of a single hand; and (b) any combination of parts from which a handgun can be assembled (18 U.S.C. §921(a)(29)).

<sup>101</sup> *Ibid.*

<sup>102</sup> U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Homicide in the U.S. Known to Law Enforcement*, 2011, December 2013, NCJ 243055, by Erica L. Smith and Alexia Cooper, p. 14, <http://www.bjs.gov/content/pub/pdf/hus11.pdf>.

<sup>103</sup> *Ibid.*

**Figure A-1. Homicide Incidents and Victims by Total Victim Count, FY1999-2011**

**Source:** CRS analysis of data from the Bureau of Justice Statistics.

It is noteworthy that the BJS data includes all four or more victim murder and nonnegligent manslaughter incidents. Those four or more victim homicide incidents include both firearms and non-firearms-related homicides, although firearms were likely used in at least two-thirds and possibly as many as three-quarters of those incidents.<sup>104</sup> Also, those BJS-reported incidents possibly include spree and serial murders, which are often, but not always, distinct from mass murders. On occasion, they could also include vehicular murders and manslaughters.

Mass shootings make up a smaller percentage of murder and nonnegligent manslaughter incidents. For the 13-year period (1999-2011), CRS data show that at least 272 (0.14%) of the BJS-reported 197,191 murder and nonnegligent manslaughter incidents were mass shootings, accounting for 1,316 (0.63%) of the 208,425 homicide victims in those incidents. CRS analysis shows further that those “mass shooting” incidents could be characterized as follows:

- “Mass public shootings” accounted for 54 incidents (0.03%) and 348 victims slain (0.17%);

<sup>104</sup>As discussed above, data provided to CRS by the Department of Justice’s Bureau of Justice Statistics suggest that there were about 32 four or more victim homicide incidents per year in the United States for the 13-year period (1999-2011). Based on the *USA Today* dataset, moreover, for the eight-year period (2006-2013), it can be surmised that on average annually for that timespan offenders committed 30.25 mass murders, of which 21.5 were mass shootings, 1.13 were mass murders that were partially related to firearms, meaning some, but not all of the victims were murdered with firearms. Another 7.63 mass murders involved no firearms. Based on both datasets, it can be extrapolated that the United States sees about 30 mass murders per year for the past 30 years. Of those mass murders, it can be postulated that about three-quarters are possibly firearms-related.

- “Familicide mass shootings” accounted for 111 incidents (0.06%) and 507 victims slain (0.24%); and
- “Other felony mass shootings” accounted for about 107 incidents (0.05%) and 461 victims slain (0.22%).

Of the 416 BJS-reported four or more victim murder and nonnegligent manslaughter incidents, CRS data show that at least 272 incidents (65.38%) were mass shootings, in which at least four victims were shot to death with a firearm in a single incident. Those mass shooting murder victims accounted for 1,316 (66.57%) of the 1,977 victims of BJS-reported four or more victim murder and nonnegligent manslaughter incidents.

In addition, based on BJS-reported triple and four or more victim murders and nonnegligent manslaughter incidents for the 13-year period (1999-2011), it can be extrapolated that a dataset of three or more victim homicides would include about 116 incidents per year on average, which would include approximately 84 triple homicide incidents and 32 four or more victim incidents on average per year. Similarly, it can be extrapolated that a 13-year (1999-2011) dataset would include about 80 three or more victim homicide incidents per year committed entirely with firearms, of which at least 21 would be four or more victim mass shootings.

### ***Extreme Killing, by James Alan Fox and Jack Levin***

Two criminologists, James Alan Fox and Jack Levin, also analyzed FBI-SHR data and established estimates of the frequency of mass murder in the United States.<sup>105</sup> In 1985, Fox and Levin adopted the following definition: “mass murder consists of the slaughter of four or more victims by one or a few assailants within a single event, lasting anywhere from a few minutes to as long as several hours.”<sup>106</sup> Like BJS, Fox and Levin statistically weighted their estimates to account for non-reporting and other known SHR data limitations. Their methodology has been professionally and academically peer-reviewed.

Based on their analysis of the FBI-SHR data, as well as Florida state homicide reports, Fox and Levin estimated that there were 927 incidents of mass murder in the United States from 1976 to 2011, resulting in the murders of 4,330 victims.<sup>107</sup> Based on these estimates, it can be extrapolated that offenders committed 25.8 mass murders on average annually, killing about 4.7 murder victims per incident for that 36-year period. Of those mass murder incidents, an estimated 721 (77.8%) involved firearms.<sup>108</sup> In other words, Fox and Levin estimated that firearms were the offender “weapon of choice” in approximately 20 out of 26 mass murder incidents annually over that 36-year time period.<sup>109</sup>

Like the CRS 15-year dataset (1999-2013), however, the Fox and Levin 36-year dataset (1976-2011) indicated that the frequency of mass murders and mass shootings and their corresponding

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<sup>105</sup> Fox was also instrumental in making those annual datasets available on the Internet through the University of Michigan’s Inter-University Consortium for Political and Social Research, <http://www.icpsr.umich.edu/icpsrweb/landing.jsp>.

<sup>106</sup> Fox and Levin, *Extreme Killing*, 2014, p. 162.

<sup>107</sup> Ibid, p. 163.

<sup>108</sup> Ibid, p. 165.

<sup>109</sup> Ibid, p. 165.

death tolls varied a good deal from year to year, but with no discernable, statistically significant tendency to increase or decrease over that time period, because the increases and decreases generally ranged within the error rate of roughly plus or minus five incidents.<sup>110</sup>

In their book *Extreme Killing*, Fox and Levin noted the challenges faced by researchers who had attempted to create mutually exclusive typologies or taxonomies of multiple murders or mass murderers based on factors like offender motive, incident location, or victim selection.<sup>111</sup> While they discussed at length profiles of mass murderers, such as “family annihilators,” “problem workers,” and “disgruntled students,” they refrained from providing statistical breakouts based on those profiles. On the other hand, they provided data for other characteristics like offender-victim relationships and circumstances (felony, argument, other), which have traditionally been delimited as part of the UCR-SHR program.

## Mass Murder in the United States: A History, by Grant Duwe

Criminologist Grant Duwe analyzed the FBI-SHR data for the years 1976 through 1999, and presented his findings in his 2007 book, *Mass Murder in the United States: A History*.<sup>112</sup> For that 24-year period, Duwe counted at least 649 mass murders, for an average of 27 mass murders per year.<sup>113</sup> Those mass murders on average resulted in an associated casualty rates of 5.2 murder victims and 4.31 wounded victims per incident.<sup>114</sup> Duwe also estimated that about 69% of those mass murder incidents involved firearms.<sup>115</sup> He estimated further that an “assault weapon” was used in about 3% of those 649 mass murder incidents.<sup>116</sup>

With regard to the FBI-SHR data, it is significant to note that Duwe identified 55 mass murders that were not reported to the FBI, but were reported in the press.<sup>117</sup> From the SHR data, moreover, he eliminated 71 cases that were not mass murders, either because they were inaccurately recorded (64), or were spree murders that occurred over a 24-hour period or serial murders (7).<sup>118</sup>

Duwe postulated that mass shootings in public spaces likely increased from 1966 through 1999. He labeled such mass shootings, “mass public shootings.” While he did not specifically define this term in his 2007 book, he later told the *Washington Post* that he defined “mass public shooting” to mean “any incident in which four or more victims are killed publically in a workplace, school, restaurant, or other public place with guns and within 24 hours.”<sup>119</sup> He postulated further that the frequency with which mass public shootings have occurred began to “accelerate” in the 1960s, and “accelerated rapidly” in the 1980s and 1990s.<sup>120</sup> Based on press

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<sup>110</sup> Ibid, p. 163.

<sup>111</sup> Ibid, pp. 26-38.

<sup>112</sup> Grant Duwe, *Mass Murder in the United States: A History*, 2007.

<sup>113</sup> Ibid, p. 16.

<sup>114</sup> Ibid, p. 17.

<sup>115</sup> Ibid, p. 23.

<sup>116</sup> Ibid.

<sup>117</sup> Ibid, p. 189.

<sup>118</sup> Ibid.

<sup>119</sup> Glenn Kessler, “Clinton’s Gun Remark Is off the Mark,” *Washington Post*, January 13, 2013, p. A02.

<sup>120</sup> Grant Duwe, *Mass Murder in the United States: A History*, 2007, p. 27.



accounts, he found that there were 21 reported mass public shootings from 1900 through 1965.<sup>121</sup> Based on FBI-SHR data and press accounts, he counted 95 “mass public shootings” from 1966 through 1999. Of those incidents, 60 had occurred during the 20-year period 1980 through 1999.<sup>122</sup> Hence, for that 20-year period, there were roughly three mass public shootings per year.

According to the *Washington Post*, in January 2013, Duwe provided the newspaper with updated and slightly revised estimates of mass public shootings.<sup>123</sup> According to Duwe, there were

- six incidents of mass public shootings in the 1960s (1960-1969),
- 13 in the 1970s,
- 32 in the 1980s,
- 42 in the 1990s, and
- 28 in the 2000s.<sup>124</sup>

He reported further that there were 14 incidents from 2010 through 2012, but it was in his view too early to tell whether this trend would continue throughout the decade.<sup>125</sup> The year 1991 was the worst year with eight incidents of mass public shootings.<sup>126</sup> The years 1999 and 2012 were the second worst years with seven incidents per year.<sup>127</sup>

In addition to mass public shootings, Duwe identified five other historical patterns of mass murder:

- “workplace violence,”
- “familicides,”
- “felony-related massacres,”
- “gang-related massacres,” and
- “drug-related massacres.”

It is significant to note that, for Duwe’s data collection and reporting, these patterns are not mutually exclusive. For example, firearms-related “workplace violence” incidents could be a subset of “mass public shootings.” Similarly, “drug- and gang-related massacres” could be a subset of “felony-related massacres.”

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<sup>121</sup> Ibid.

<sup>122</sup> Ibid.

<sup>123</sup> Glenn Kessler, “Clinton’s Gun Remark Is off the Mark,” *Washington Post*, January 13, 2013, p. A02.

<sup>124</sup> Ibid. By comparison, the CRS mass shootings dataset indicates that there were at least 4.1 mass public shootings per year in the 2000s, and 4.5 per year so far in 2010s (through 2013). In consultation with Duwe, CRS also re-evaluated Duwe’s dataset for the 1970s, 1980s, and 1990s, and revised these decade-long averages slightly downward, by eliminating certain mass shootings, which upon further examination could be characterized as familicides or object-oriented other felony mass shootings.

<sup>125</sup> Ibid. CRS analysis of the SHR data, supplemented with press accounts, indicates that there were at least five public mass shootings in 2013, the most of deadly of which was the September 16, 2013, Washington, DC, Navy Yard shooting.

<sup>126</sup> Ibid.

<sup>127</sup> Ibid.



## **“Mass Killings,” by *USA Today***

In December 2013, *USA Today* ran an article on mass killings by Meghan Hoyer,<sup>128</sup> based on an eight-year dataset (2006-2013) that Hoyer had compiled and analyzed with her colleagues Mark Hannon, Paul Overburg, and Jodi Upton.<sup>129</sup> Like Duwe, Hoyer and her colleagues also verified the mass murders reported to the FBI by checking press accounts and police reports. In addition, they supplemented their data with mass murders reported in the press, but not reported to the FBI. According to Hoyer and colleagues, offenders committed roughly 242 mass murders, resulting in the deaths of four or more victims, during the eight-year period (2006-2013), or an average of 30.3 incidents per year, and 4.98 victims per incident.<sup>130</sup> Of those mass murders, on average annually:

- 21.5 incidents were “mass shootings” with 5.1 victims per incident,
- 1.25 incidents were “mass murders” with 4.8 victims per incident that involved at least some firearms, and
- 7.5 incidents were “mass murders” with 4.3 victims per incident and did not involve firearms (for a small percentage of incidents (2.1%), the murder weapons were unknown).<sup>131</sup>

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<sup>128</sup> Meghan Hoyer, “Behind the Bloodshed: In Mass Killings, One-Third of the Victims Are Kids,” *USA Today*, December 4, 2013, pp. 1A-2A.

<sup>129</sup> “Explore the Data on U.S. Mass Killings Since 2006,” *USA Today*, <http://www.usatoday.com/story/news/nation/2013/09/16/mass-killings-data-map/2820423/>.

<sup>130</sup> *Ibid.*

<sup>131</sup> *Ibid.*

## Appendix B. CRS-Verified Mass Shootings, Mass Public Shootings, Familicides, and Other Felony Mass Shootings Data Tables

The tables **B-1** through **B-7** include the data represented in **Figures 1-7** above in the body of this report.

**Table B-1. Mass Shootings**  
(1999-2013)

YEAR	Incidents	Killed	Wounded	Total Casualties	% Killed	%Wounded
1999	21	113	58	171	66.1%	33.9%
2000	18	86	8	94	91.5%	8.5%
2001	13	53	7	60	88.3%	11.7%
2002	23	102	10	112	91.1%	8.9%
2003	29	125	29	154	81.2%	18.8%
2004	15	69	11	80	86.3%	13.8%
2005	18	84	14	98	85.7%	14.3%
2006	22	103	9	112	92.0%	8.0%
2007	20	120	35	155	77.4%	22.6%
2008	26	119	28	147	81.0%	19.0%
2009	26	145	77	222	65.3%	34.7%
2010	17	82	19	101	81.2%	18.8%
2011	24	115	37	152	75.7%	24.3%
2012	20	122	73	195	62.6%	37.4%
2013	25	116	26	142	81.7%	18.3%
TOTAL	317	1554	441	1,995	77.9%	22.1%

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and in one or more locations in close geographical proximity.

**Table B-2. Mass Public Shootings at Workplace, Schools, Restaurants, and Other Public Places**  
(1999-2013)

YEAR	Incidents	Killed	Wounded	Total Casualties	% Killed	%Wounded
1999	7	51	53	104	49.0%	51.0%
2000	3	17	1	18	94.4%	5.6%
2001	3	12	7	19	63.2%	36.8%
2002	4	18	6	24	75.0%	25.0%
2003	4	20	9	29	69.0%	31.0%
2004	3	15	11	26	57.7%	42.3%
2005	3	20	11	31	64.5%	35.5%
2006	5	27	9	36	75.0%	25.0%
2007	5	55	33	88	62.5%	37.5%
2008	5	26	22	48	54.2%	45.8%
2009	6	52	54	106	49.1%	50.9%
2010	2	12	5	17	70.6%	29.4%
2011	4	23	25	48	47.9%	52.1%
2012	7	67	69	136	49.3%	50.7%
2013	5	31	14	45	68.9%	31.1%
TOTAL	66	446	329	775	57.5%	42.5%

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Mass public shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders *are not* attributable to any other underlying criminal activity or commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

**Table B-3. Familicide Mass Shootings**  
(1999-2013)

YEAR	Incidents	Killed	Wounded	Total Casualties	% Killed	%Wounded
1999	7	32	2	34	94.1%	5.9%
2000	7	31	0	31	100.0%	0.0%
2001	6	25	0	25	100.0%	0.0%
2002	10	45	1	46	97.8%	2.2%
2003	8	35	5	40	87.5%	12.5%
2004	5	25	0	25	100.0%	0.0%
2005	5	22	1	23	95.7%	4.3%
2006	6	28	0	28	100.0%	0.0%
2007	9	41	1	42	97.6%	2.4%

YEAR	Incidents	Killed	Wounded	Total Casualties	% Killed	%Wounded
2008	12	54	3	57	94.7%	5.3%
2009	13	57	2	59	96.6%	3.4%
2010	7	37	2	39	94.9%	5.1%
2011	16	75	12	87	86.2%	13.8%
2012	7	29	4	33	87.9%	12.1%
2013	9	40	4	44	90.9%	9.1%
TOTAL	127	576	37	613	94.0%	6.0%

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, and agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Familicide mass shooting” means a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and a majority of the victims were members of the offender’s immediate or extended family, the majority of whom were murdered in one or more private residences or secluded, sparsely populated settings in close geographical proximity, and the murders are *not* attributable to any other underlying criminal activity or commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

**Table B-4. Other Felony Mass Shootings**  
(1999-2013)

YEAR	Incidents	Killed	Wounded	Total Casualties	% Killed	%Wounded
1999	7	30	3	33	90.9%	9.1%
2000	8	38	7	45	84.4%	15.6%
2001	4	16	0	16	100.0%	0.0%
2002	9	39	3	42	92.9%	7.1%
2003	17	70	15	85	82.4%	17.6%
2004	7	29	0	29	100.0%	0.0%
2005	10	42	2	44	95.5%	4.5%
2006	11	48	0	48	100.0%	0.0%
2007	6	24	1	25	96.0%	4.0%
2008	9	39	3	42	92.9%	7.1%
2009	7	36	21	57	63.2%	36.8%
2010	8	33	12	45	73.3%	26.7%
2011	4	17	0	17	100.0%	0.0%
2012	6	26	0	26	100.0%	0.0%
2013	11	45	8	53	84.9%	15.1%
TOTAL	124	532	75	607	87.6%	12.4%

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, and agency press releases, and other compilations by mass media and advocacy groups.

**Notes:** “Other felony mass shooting” means a multiple victim homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, in one or more locations in close geographical proximity, and the murders are attributable to some other underlying criminal activity or

commonplace circumstance (e.g., armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).

**Table B-5. Patterns of Mass Shootings and Associated Casualty Rates by Incident and Offender(s), 1999-2013**

<b>Mass Shooting Categories</b>	<b>Incidents</b>	<b>Offenders</b>	<b>Killed</b>	<b>Wounded</b>	<b>Killed per Incident</b>	<b>Wounded per Incident</b>	<b>Killed per Offender(s)</b>	<b>Wounded per Offender(s)</b>
Public	66	68	446	329	6.8	5.0	6.6	4.8
Familicide	127	129	576	37	4.5	0.3	4.5	0.3
Other "Felony"	124	235	532	75	4.3	0.6	2.3	0.3
Total	317	432	1,554	441	4.9	1.4	3.6	1.0

**Source:** CRS analysis of FBI Supplementary Homicide Reports, press accounts, agency press releases, and other compilations by mass media and advocacy groups.

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# EXHIBIT 112

# TARGETING GUNS

FIREARMS  
AND THEIR  
CONTROL

Gary Kleck



# Targeting Guns

*Firearms and Their Control*

**Gary Kleck**



exclude from restriction the most widely owned models that have these attributes, since this severely limits the impact of regulation by allowing an ample supply of legally available semiautomatic models to be substituted for the handful of banned models.

### **The Prevalence of AWs as Crime Weapons**

It was commonplace for news sources in the late 1980s and 1990s to refer to either "assault weapons" or "assault rifles" as the "favored" weapon of criminals, or, more narrowly, of drug dealers and youth gangs (e.g., *New York Times*, 21 February 1989; *Newsweek*, 14 October 1985, p. 48). This claim was not true, either for criminals in general or for these specific types of criminals. This claim was largely based on guns the police agencies asked BATF to trace. In 1986–1990, 8.2% of BATF-traced guns were classified as "assault weapons" (reported in U.S. Congressional Research Service 1992:10). Unfortunately, the guns traced by BATF are not representative of guns used in crime, nor does BATF claim they are. Crime guns are rarely traced, and the few that are traced are not selected in a way that would ensure they are representative of all crime guns. In 1994, only 1.8% of homicides, robberies, and aggravated assaults known to the police and committed with a gun resulted in a BATF gun trace (computed from data in U.S. BATF 1995:43; U.S. FBI 1995:18, 29, 32, 58). As the Congressional Research Service noted, "the firearms selected for tracing do not constitute a random sample and cannot be considered representative of the larger universe of all firearms used by criminals, or of any subset of that universe" (U.S. Congressional Research Service 1992: 65).

Table 4.1 summarizes the available evidence on the share of crime guns that are AWs. These studies are mostly analyses of guns recovered by police from criminals, and typically cover *all* of the guns recovered in a given period, rather than some small, unrepresentative subset. The findings indicate that less than 2% of crime guns are "assault weapons" (the median was about 1.8%) and well under 1% are "assault rifles." Only two estimates, of forty-seven total, were over 4.3%. The estimate based on guns traced by BATF was double that of the next highest one, and over four times the typical figure obtained in studies of complete populations of guns recovered by police, indicating that trace data grossly overstate AW involvement in crime. Since about 14% of violent crimes are committed with guns (U.S. Bureau of Justice Statistics 1994a:83), this means that only about 1 in 400 ( $1.8\% \times 14\% = 0.25\%$ ) violent crimes are committed with AWs.

One can artificially increase the share of crime guns that are "AWs"

# EXHIBIT 113



## SPECIAL REPORT

JANUARY 2019

NCJ 251776

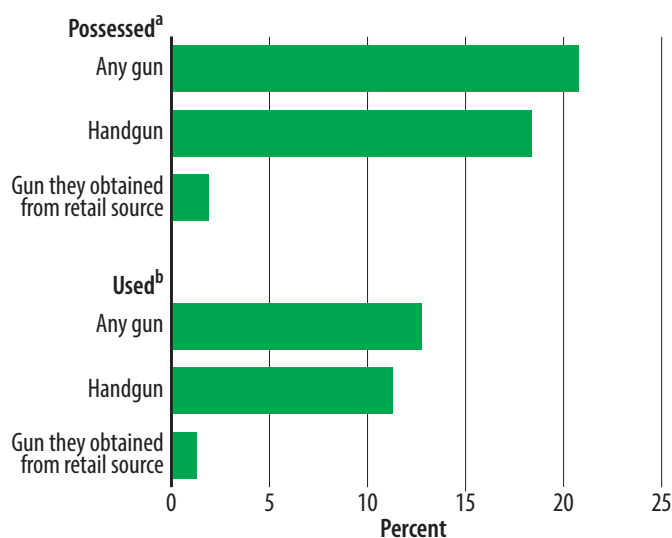
# Source and Use of Firearms Involved in Crimes: Survey of Prison Inmates, 2016

Mariel Alper, Ph.D., and Lauren Glaze, *BJS Statisticians*

**B**ased on the 2016 Survey of Prison Inmates (SPI), about 1 in 5 (21%) of all state and federal prisoners reported that they had possessed or carried a firearm when they committed the offense for which they were serving time in prison (**figure 1**). More than 1 in 8 (13%) of all prisoners had used a firearm by showing, pointing, or discharging it during the offense for which they were imprisoned. Fewer than 1 in 50 (less than 2%) of all prisoners had obtained a firearm from a retail source and possessed, carried, or used it during the offense for which they were imprisoned.

An estimated 287,400 prisoners had possessed a firearm during their offense. Among these, more than half (56%) had either stolen it (6%), found it at the scene of the crime (7%), or obtained it off the street or from the underground market (43%). Most of the remainder (25%) had obtained it from a family member or friend, or as a gift. Seven percent had purchased it under their own name from a licensed firearm dealer.

**FIGURE 1**  
Percent of all state and federal prisoners who had possessed or used a firearm during their offense, 2016



Note: See appendix table 1 for standard errors.

<sup>a</sup>Includes prisoners who carried or possessed a firearm during the offense.

<sup>b</sup>Includes prisoners who showed, pointed, or discharged a firearm during the offense.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

## HIGHLIGHTS

- About 21% of state and 20% of federal prisoners said they possessed a gun during their offense, while 79% of state and 80% of federal prisoners did not.
- About 29% of state and 36% of federal prisoners serving time for a violent offense possessed a gun during the offense.
- About 1.3% of prisoners obtained a gun from a retail source and used it during their offense.
- Handguns were the most common type of firearm possessed by state and federal prisoners (18% each); 11% of all prisoners used a handgun.
- Among prisoners who possessed a gun during their offense, 90% did not obtain it from a retail source.
- Among prisoners who possessed a firearm during their offense, 0.8% obtained it at a gun show.
- About 1 in 5 state and federal prisoners who possessed a firearm during their offense obtained it with the intent to use it during the crime.
- Among state prisoners who possessed a gun during their offense, 27% killed someone with it, another 12% injured someone, 7% fired the gun but did not injure anyone, and 54% did not fire it.
- State prisoners with no military service were more likely to possess a gun during their offense (21%) than prisoners who had served in the military (16%).

Statistics in this report are based on self-reported data collected through face-to-face interviews with a national sample of state and federal prisoners in the 2016 SPI. (See *Methodology*.)

The 2016 SPI data collection was conducted from January through October 2016. The SPI was formerly known as the Survey of Inmates in State and Federal Correctional Facilities (SISFCF). The Bureau of Justice Statistics (BJS) has periodically conducted the

survey since the 1970s, with the most recent iteration fielded in 2004. The survey collects information from prisoners on a variety of topics, including firearm possession during the crime for which a prisoner was serving time and how the firearm was used during the crime. It also collects information on the method, source, and process that prisoners used to obtain the firearm. (See appendix 1, *Questions related to firearms in the Survey of Prison Inmates, 2016*.)

## Terms and definitions

- **Firearm** – a weapon that uses gunpowder to shoot a bullet. Primary types are handguns, rifles, and shotguns:<sup>1</sup>
  - **Handgun** – a firearm which has a short stock and is designed to be held and fired by the use of a single hand.
  - **Rifle** – a firearm intended to be fired from the shoulder and designed to use the energy of an explosive to fire only a single projectile through a rifled bore for each single pull of the trigger.
  - **Shotgun** – a firearm intended to be fired from the shoulder and designed to use the energy of an explosive to fire through a smooth bore either a number of ball shot or a single projectile for each pull of the trigger.
- **Firearm possession** – carrying or possessing at least one firearm when the offense for which prisoners were serving a sentence was committed.
- **Firearm use** – showing a firearm to or pointing a firearm at anyone or discharging a firearm during the offense for which a prisoner was serving time.
- **Source of the firearm** – from where and how prisoners reported obtaining the firearm they possessed during the crime for which they were imprisoned—
  - **Purchased or traded from a retail source** – includes a gun shop or store, pawn shop, flea market, or gun show.
    - **Gun shop or store** – a business establishment that sells firearms in an open shopping format.
    - **Pawn shop** – a business that offers secured loans to customers, with personal property used as collateral. This personal property is sold to the public if the loan is not repaid.
    - **Flea market** – a market that rents space to individuals to sell or barter merchandise.
    - **Gun show** – a temporary market where licensed dealers and unlicensed sellers can rent tables or booths to sell firearms.
  - **Obtained from an individual** – includes purchasing, trading, renting, or borrowing from a family or friend. Also includes when the firearm was gifted to or purchased for the person.
  - **Off the street or underground market** – illegal sources of firearms that include markets for stolen goods, middlemen for stolen goods, criminals or criminal enterprises, or individuals or groups involved in sales of illegal drugs.
  - **Theft** – includes stealing the firearm during a burglary or from a retail source, family member, friend, or another source.
  - **Other sources** – includes a firearm that a prisoner obtained or found at the location of the crime, including one that belonged to a victim or that someone else brought to the location of the crime. This category also includes sources for which there were few responses, such as for guns bought online, and other sources that did not fit into one of the existing categories. This also includes instances where there was not enough information to categorize the source, such as when a firearm was purchased from an unknown source or obtained from another person by an unknown method.

<sup>1</sup>The definitions of types of firearms in this section were taken from 18 U.S.C. § 921 (2009). They have been edited for length.

### Controlling-offense characteristics

About 29% of state and 36% of federal prisoners serving a sentence for a violent offense in 2016 possessed a firearm during the crime (**table 1**). About a quarter of state (23%) and federal (25%) prisoners serving time for a violent offense used a firearm during the crime. “Firearm use” is defined in this report as showing, pointing, or discharging a firearm during the offense for which a prisoner was serving a sentence.

Among prisoners serving time for homicide, more than 2 in 5 (44%) state prisoners and more than 1 in 3 (36%) federal prisoners had possessed a firearm during

the crime. About 37% of state and 28% of federal prisoners serving time for homicide used a firearm during the homicide.

Among those serving time for robbery, more than 2 in 5 state prisoners (43%) and federal prisoners (46%) possessed a firearm during the offense, and nearly a third of state (31%) and federal (32%) prisoners used a firearm during the robbery. Firearm possession was less common among state prisoners serving a sentence for rape or sexual assault (2%). Less than 1% of state prisoners serving time for rape or sexual assault used a firearm in the commission of their crime.

**TABLE 1**

**Firearm possession and use among state and federal prisoners during the offense for which they were serving time, by type of controlling offense, 2016**

Controlling offense <sup>a</sup>	Estimated number of state prisoners <sup>b</sup>	Percent of state prisoners who—		Estimated number of federal prisoners <sup>b</sup>	Percent of federal prisoners who—	
		Possessed a firearm <sup>b</sup>	Used a firearm <sup>c</sup>		Possessed a firearm <sup>b</sup>	Used a firearm <sup>c</sup>
<b>Total</b>	1,211,200	20.9%	13.9%	170,400	20.0%	5.0%
<b>Violent*</b>	667,300	29.1%	23.0%	20,900	36.2%	25.3%
Homicide <sup>d</sup>	191,400	43.6	37.2	3,800	35.9	28.4
Rape/sexual assault	144,800	2.0	0.8	2,400	:	:
Robbery	149,600	43.3	31.5	10,700	46.3	32.1
Assault	149,400	25.0	20.6	2,900	29.0	18.1
Other violent <sup>e</sup>	32,200	17.0	12.6	1,200	34.1	:
<b>Property</b>	186,100	4.9% †	2.0% †	12,000	2.6% †	:
Burglary	88,100	6.7	3.2	300	:	:
Other property <sup>f</sup>	98,000	3.3	1.0	11,800	2.4	:
<b>Drug</b>	180,800	8.4% †	0.8% †	80,500	12.3% †	0.6% †
Trafficking <sup>g</sup>	130,500	9.4	0.9	72,300	12.9	0.7
Possession	45,900	6.1	:	3,500	:	:
Other/unspecified drug	4,300	:	:	4,700	:	:
<b>Public order</b>	158,300	21.5% †	5.6% †	52,900	30.2%	5.3% †
Weapons <sup>h</sup>	43,800	67.2	15.7	22,200	66.9	11.3
Other public order <sup>i</sup>	114,400	4.0	1.7	30,700	3.6	:
<b>Other</b>	3,900	:	:	1,800	:	:
<b>Unknown</b>	14,900	4.3% †	:	2,200	:	:

Note: See appendix table 2 for standard errors.

\*Comparison group.

†Difference with comparison group is significant at the 95% confidence level across main categories, and no testing was done on subcategories (e.g., homicide).

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>See *Methodology* for information on how controlling offense was measured.

<sup>b</sup>Excludes 3.0% of state prisoners and 1.7% of federal prisoners who were missing responses on firearm possession. Includes prisoners who were missing responses on firearm use.

<sup>c</sup>Excludes 3.0% of state prisoners and 1.7% of federal prisoners who were missing responses on firearm possession, and an additional 0.6% of state prisoners and 0.7% of federal prisoners who were missing responses on firearm use.

<sup>d</sup>Includes murder and both negligent and non-negligent manslaughter.

<sup>e</sup>Includes kidnapping, blackmail, extortion, hit-and-run driving with bodily injury, child abuse, and criminal endangerment.

<sup>f</sup>Includes larceny, theft, motor vehicle theft, arson, fraud, stolen property, destruction of property, vandalism, hit-and-run driving with no bodily injury, criminal tampering, trespassing, entering without breaking, and possession of burglary tools.

<sup>g</sup>Includes possession with intent to distribute.

<sup>h</sup>Includes being armed while committing a crime; possession of ammunition, concealed weapons, firearms and explosive devices; selling or trafficking weapons; and other weapons offenses. Among federal prisoners, weapons offense include violations of federal firearms and explosives.

<sup>i</sup>Includes commercialized vice, immigration crimes, DUI, violations of probation/parole, and other public-order offenses.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.



State and federal prisoners serving time for a violent offense were much more likely to have possessed a firearm during the offense (29% state, 36% federal) than prisoners serving time for a property (5% state, 3% federal) or drug (8% state, 12% federal) offense. Among prisoners serving time for a public-order offense, about 1 in 5 (21%) state prisoners and nearly 1 in 3 (30%) federal prisoners reported that they possessed a firearm during the crime, and about 1 in 20 reported they had used it. About two-thirds of state and federal prisoners sentenced for a weapons offense said they possessed a firearm during the crime.<sup>2</sup>

<sup>2</sup>In addition to prisoners serving a sentence in state or federal prison in 2016 who possessed a firearm during the offense, weapons offenses include prisoners who were convicted of trafficking firearms but did not possess them at the time of the offense and prisoners who were convicted of a weapons offense that did not involve a firearm.

### Extent of firearm use among prisoners during the crime

State and federal prisoners in 2016 who had possessed a firearm during their offense were about equally likely to report that they had obtained the firearm with the intent to use it during the offense (19% state, 20% federal) (table 2). However, state prisoners (68%) who possessed a firearm were more than 2.5 times as likely as federal prisoners (26%) who possessed a firearm to have used it during the crime.

Nearly half of state prisoners (46%) serving a sentence for a crime during which they possessed a firearm discharged the firearm when they committed the crime, compared to 12% of federal prisoners. Among state prisoners who possessed a firearm during their offense, 27% killed a victim with the firearm and another 12% injured or shot a victim but did not kill him or her. Federal prisoners who possessed a firearm when they committed their offense were much less likely to have killed (4%) or injured (2%) a victim with the firearm than state prisoners.

**TABLE 2**

**Among state and federal prisoners who possessed a firearm during the offense for which they were serving time, extent of firearm use, 2016**

Firearm use	State prisoners*	Federal prisoners	State prisoners		Federal prisoners	
			Violent offense*	Non-violent offense <sup>a</sup>	Violent offense*	Non-violent offense <sup>a</sup>
Total	100%	100%	100%	100%	100%	100%
Obtained firearm because planned to use in controlling offense <sup>b</sup>						
Yes	19.3%	19.7%	17.7%	24.6% †	26.4%	18.0%
No	80.7	80.3	82.3	75.4 †	73.6	82.1
Used firearm <sup>c</sup>						
Discharged	68.0%	25.9% †	81.0%	24.8% †	72.5%	12.9% †
Killed victim	46.5%	11.9% †	55.9%	15.4% †	27.3%	7.5% †
Injured/shot victim but did not kill victim	27.1	4.1 †	35.0	:	16.5	:
Discharged firearm but did not shoot anyone	12.4	2.2 †	14.5	5.3 †	:	:
Did not discharge <sup>d</sup>	7.0	5.6	6.4	9.0	5.7	5.4
Did not use firearm	21.5%	14.0% †	25.2%	9.4% †	45.3%	5.4% †
Estimated number of prisoners who possessed a firearm (with valid data) <sup>e</sup>	32.0%	74.1% †	19.0%	75.2% †	27.5%	87.1% †
	245,400	32,900	187,800	57,000	7,200	25,600

Note: Percentages are based on data reported on firearm possession, use, and controlling offense. Excludes 3.1% of state prisoners and 3.5% of federal prisoners who possessed a firearm during the offense and were missing responses on firearm use and 0.3% of state prisoners and 0.7% of federal prisoners who possessed a firearm and were missing a controlling offense. The sum of violent offense and non-violent offense does not equal the total number of state and federal prisoners who possessed a firearm in this table due to an estimated 600 state and 100 federal prisoners whose offense type was unknown. See appendix table 3 for standard errors.

\*Comparison group.

†Difference with comparison group is significant at the 95% confidence level.

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>Includes property, drug, public order, and other non-violent offenses.

<sup>b</sup>Percentages are based on the 246,200 state and 32,600 federal prisoners who reported they carried or possessed a firearm and whether they obtained a firearm to use during the offense.

<sup>c</sup>Includes prisoners who showed a firearm to anyone, pointed a firearm at anyone, or discharged the firearm during the offense.

<sup>d</sup>Includes prisoners who showed or pointed a firearm at anyone during the offense but did not discharge it.

<sup>e</sup>Includes prisoners who reported they carried or possessed a firearm. Excludes prisoners who were missing responses on firearm possession or use. For violent offense and non-violent offense, also excludes prisoners who were missing a controlling offense.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

Among prisoners who possessed a firearm during a violent offense, a large majority of both state (81%) and federal (73%) prisoners used the firearm during the offense, far more than the percentages for non-violent offenders (25% state, 13% federal). More than half (56%) of state prisoners serving time for a violent offense who possessed a firearm during the crime discharged it, compared to fewer than a sixth (15%) of non-violent offenders in state prison who possessed a firearm. Violent offenders (27%) in federal prison who possessed a firearm during the crime were about 3.5 times as likely to discharge it as non-violent offenders (8%). Among state prisoners who had possessed a firearm during their offense, however, non-violent offenders (25%) were more likely than violent offenders (18%) to have planned to use the firearm during the offense.

### Type of firearm possessed by prisoners during offense

Handguns were by far the most common type of firearm possessed or used by prisoners during the crime for which they were sentenced. About 18% of all state and federal prisoners in 2016 reported that they had possessed a handgun during the crime for which they were serving a sentence (table 3). Two percent or fewer possessed a rifle or a shotgun. Twelve percent of state and 5% of federal prisoners used a handgun during their offense. Most state (79%) and federal (80%) prisoners did not possess any type of firearm during the crime for which they were imprisoned.

**TABLE 3**

**Firearm possession and use among state and federal prisoners during the offense for which they were serving time, by type of firearm, 2016**

Type of firearm	Percent of prisoners who possessed a firearm			Percent of prisoners who used a firearm <sup>a</sup>		
	All prisoners	State*	Federal	All prisoners	State*	Federal
Total	100%	100%	100%	100%	100%	100%
Firearm <sup>b</sup>	20.8%	20.9%	20.0%	12.8%	13.9%	5.0% †
Handgun	18.4	18.4	18.3	11.2	12.2	4.6
Rifle	1.5	1.4	2.0 †	0.8	0.8	0.4 †
Shotgun	1.6	1.6	1.7	1.1	1.2	0.4 †
No firearm	79.2%	79.1%	80.0%	87.2%	86.1%	95.0%
Estimated number of prisoners (with valid data) <sup>c</sup>	1,378,200	1,208,100	170,100	1,378,200	1,208,100	170,100

Note: Details on type of firearm may not sum to totals because prisoners could report more than one type of firearm. Percentages exclude missing data. Excludes 3.0% of state prisoners and 1.7% of federal prisoners who were missing responses on firearm possession during the offense and an additional 0.3% of state prisoners and 0.2% of federal prisoners who were missing responses on type of firearm. See appendix table 4 for standard errors.

\*Comparison group.

†Difference with comparison group is significant at the 95% confidence level.

<sup>a</sup>Percentages exclude 0.6% of state prisoners and 0.7% of federal prisoners who were missing responses on firearm use.

<sup>b</sup>Includes prisoners who reported a type of firearm that did not fit into one of the existing categories and those who did not provide enough information to categorize the type of firearm. About 0.1% of state prisoners and 0.2% of federal prisoners reported another type of firearm or did not report enough information to specify the type of firearm.

<sup>c</sup>Excludes prisoners who were missing responses on firearm possession or type of firearm. Counts are weighted to totals from the 2015 National Prisoner Statistics Program; see *Methodology: Survey of Prison Inmates, 2016* (NCJ 252210, BJS web, July 2019).

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

### Demographic characteristics

Male prisoners were more likely than female prisoners to have possessed a firearm during their crime. About a fifth of male state and federal prisoners serving a sentence in 2016 possessed a firearm during the crime (table 4). Males in state prisons in 2016 were about 2.5 times as likely (22%) as females in state prisons (9%) to have possessed a firearm during the crime for which they were imprisoned. In federal prisons, males (21%) were about three times as likely as females (7%) to have possessed a firearm during their crime. Almost

3 in 10 (29%) black prisoners serving a sentence in state prison in 2016 possessed a firearm during their crime. White (12%) and Hispanic (21%) state prisoners were less likely to have possessed a firearm during their crime. Similarly, white (17%) and Hispanic (13%) federal prisoners serving a sentence in 2016 were less likely to have possessed a firearm during the crime than black (29%) federal prisoners. State prisoners who served in the military were less likely to have possessed a firearm during their crime (16%) than state prisoners who had not served in the military (21%).

**TABLE 4**

**Firearm possession among state and federal prisoners during the offense for which they were serving time, by demographic characteristics, 2016**

Demographic characteristic	State		Federal	
	Number of prisoners	Percent of prisoners who possessed a firearm during the offense	Number of prisoners	Percent of prisoners who possessed a firearm during the offense
<b>Sex</b>				
Male*	1,124,200	21.8%	159,800	20.9%
Female	87,000	9.5 †	10,600	6.6 †
<b>Race/Hispanic origin<sup>a</sup></b>				
White	383,300	12.4% †	35,400	16.6% †
Black*	401,500	29.4	53,800	29.2
Hispanic	247,200	21.5 †	62,600	12.6 †
American Indian/Alaska Native	17,200	14.8 †	2,800	23.8
Asian/Native Hawaiian/Other Pacific Islander	10,700	22.8	2,600	:
Two or more races	133,100	19.1 †	10,900	29.3
<b>Age at time of survey</b>				
18–24*	123,800	31.7%	8,200	30.1%
25–34	389,100	24.4 †	47,700	27.4
35–44	318,800	19.3 †	58,800	19.0 †
45–54	224,800	14.6 †	36,700	14.1 †
55 or older	154,800	16.0 †	19,000	12.2 †
<b>Marital status</b>				
Married*	168,500	16.7%	36,800	14.4%
Widowed/widowed	34,300	18.3	3,100	21.7
Separated	58,300	12.7 †	9,600	12.8
Divorced	233,300	14.5	30,900	15.2
Never married	715,900	24.8 †	90,000	24.6 †
<b>Education<sup>b</sup></b>				
Less than high school*	750,500	23.1%	94,900	22.7%
High school graduate	273,700	19.6 †	36,500	19.4
Some college	133,900	14.7 †	23,100	18.8
College degree or more	43,600	11.0 †	12,700	6.3 †
<b>Citizenship</b>				
U.S. citizen*	1,156,800	21.0%	127,500	24.2%
Non-U.S. citizen	53,100	18.5	42,400	7.2 †
<b>Military service</b>				
Yes*	95,200	15.6%	9,200	15.9%
No	1,115,900	21.4 †	161,200	20.3

Note: Percentages and counts exclude missing data. Excludes 3.0% of state prisoners and 1.7% of federal prisoners who were missing responses on firearm possession during the offense. Details for counts may not sum to totals due to missing data. See appendix table 5 for standard errors.

\*Comparison group.

†Difference with comparison group is significant at the 95% confidence level.

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>Excludes persons of Hispanic/Latino origin, unless specified.

<sup>b</sup>Based on highest year of education completed.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.



In general, the likelihood of state and federal prisoners having possessed a firearm during their crime decreased with age. Firearm possession among state prisoners ages 18 to 24 (32%) in 2016 was more common than among older prisoners. Federal prisoners ages 18 to 24 (30%) were more likely to possess a firearm than those age 35 or older (16%, not shown in table).

The difference in firearm possession between U.S. citizens (21%) and non-citizens (18%) in state prisons in 2016 was not statistically significant. Among federal prisoners serving a sentence in 2016, firearm possession was more than three times as high among U.S. citizens (24%) as non-citizens (7%).

### Method, source, and process used to obtain the firearm

Among prisoners who possessed a firearm when they committed the offense for which they were imprisoned and who reported the source from which they obtained it, the most common source (43%) was off-the-street or the underground market (table 5). Another 7% of state and 5% of federal prisoners stole the firearm, and 7% of state and 8% of federal prisoners reported that they obtained the firearm at the location of the crime.

**TABLE 5**

**Among state and federal prisoners who had possessed a firearm during the offense for which they were serving time, sources and methods used to obtain a firearm, 2016**

Source and method to obtain firearm	All prisoners	State	Federal
<b>Purchased/traded at retail source</b>	10.1%	9.7%	13.7%
Gun shop/store	7.5	7.2	9.6
Pawn shop	1.6	1.5	2.2
Flea market	0.4	:	:
Gun show	0.8	0.8	1.4
<b>Obtained from individual</b>	25.3%	26.0%	20.5%
Purchased/traded from family/friend	8.0	7.9	9.1
Rented/borrowed from family/friend	6.5	7.0	3.0
Gift/purchased for prisoner	10.8	11.2	8.4
<b>Off the street/underground market<sup>a</sup></b>	43.2%	43.2%	42.9%
<b>Theft<sup>b</sup></b>	6.4%	6.6%	4.7%
From burglary	1.5	1.5	:
From retail source	0.2	:	:
From family/friend	1.6	1.8	:
Unspecified theft <sup>c</sup>	3.1	3.3	1.8
<b>Other source</b>	17.4%	17.1%	20.1%
Found at location of crime/victim	6.9	6.7	7.9
Brought by someone else	4.6	4.7	3.6
Other <sup>d</sup>	5.9	5.6	8.5
<b>Multiple sources<sup>e</sup></b>	2.5%	2.6%	2.0%
<b>Estimated number of prisoners who possessed a firearm, excluding prisoners who did not report source<sup>f</sup></b>	256,400	227,100	29,300

Note: Prisoners were asked to report all sources and methods of obtaining any firearm they possessed during the offense, so details may not sum to totals. Each source is included in this table when multiple sources were reported. See *Methodology*. Percentages exclude missing data. Excludes 10.3% of state prisoners and 14.1% of federal prisoners who possessed a firearm during the offense and were missing responses on either source or method of obtaining the firearm. These prisoners were excluded either because they did not provide a valid response or they did not receive the questions due to providing an open-ended response to the previous question about type of weapon. See appendix table 6 for standard errors.

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>Illegal sources of firearms that include markets for stolen goods, middlemen for stolen goods, criminals or criminal enterprises, or individuals or groups involved in sales of illegal drugs.

<sup>b</sup>Excludes theft from victim.

<sup>c</sup>Includes theft where the source could not be identified and theft other than from a burglary, retail location, family, or friend.

<sup>d</sup>Included if no source specified in the table was reported. Includes sources that did not fit into one of the existing categories, sources for which there were few responses such as bought online, or if there was not enough information to categorize the source. Examples of other sources include bought from an unknown source or obtained from a friend by an unknown method.

<sup>e</sup>Includes prisoners who reported multiple sources or methods that fit into more than one of the categories. Each reported source is included in the categories above.

<sup>f</sup>Includes prisoners who reported they carried or possessed a firearm and prisoners who reported a source or method.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

Among prisoners who possessed a firearm during the offense for which they were imprisoned, 7% of state and 10% of federal prisoners serving a sentence in 2016 bought or traded for the firearm from a gun shop or gun store. About 1% bought or traded for the firearm at a gun show. About a quarter (26%) of state prisoners and about a fifth (21%) of federal prisoners obtained a firearm that they possessed during their offense from an individual in a non-retail setting, such as a friend or family member.

Prisoners who reported that they had purchased or traded a firearm at a retail source were asked if they had obtained the firearm from a licensed dealer or private seller. Among prisoners who had possessed a firearm during the offense for which they were serving time, 8% of state and 11% of federal prisoners had purchased it from or traded with a licensed firearm dealer at a retail source (table 6).

Prisoners who reported that they had purchased a firearm from a licensed firearm dealer at a retail source were further asked whether they bought the firearm under their own name and whether they knew a background check was conducted. Among those who had possessed a firearm during the offense for which they were imprisoned, 7% of state and 8% of federal prisoners had purchased it under their own name from a licensed firearm dealer at a retail source, while approximately 1% of state and 2% of federal prisoners had purchased a firearm from a licensed dealer at a retail source but did not purchase it under their own name (not shown in table).

Among all prisoners who purchased or traded a firearm from a licensed firearm dealer at a retail source (8.2%), the majority reported that a background check was conducted (6.7%).

**TABLE 6**

**Among state and federal prisoners who had possessed a firearm during the offense for which they were serving time, processes used to obtain a firearm, 2016**

Process to obtain firearm	All prisoners	State	Federal
<b>Total</b>	100%	100%	100%
<b>Not purchased or traded at retail source</b>	89.9%	90.3%	86.3%
<b>Purchased or traded at retail source<sup>a</sup></b>	10.1%	9.7%	13.7%
Licensed firearm dealer at retail source	8.2	7.9	10.9
Purchased under own name <sup>b</sup>	6.9	6.8	8.4
Background check was reportedly conducted <sup>c</sup>	6.7	6.3	9.4
Private seller at retail source <sup>d</sup>	1.2	1.1	2.3
Unknown <sup>e</sup>	0.7	0.8	:
<b>Estimated number of prisoners who possessed a firearm (with valid data)<sup>f</sup></b>	256,400	227,100	29,300

Note: Percentages exclude missing data. Excludes 10.3% of state prisoners and 14.1% of federal prisoners who possessed a firearm during the offense and were missing responses on source or method of obtaining the firearm. See appendix table 7 for standard errors.

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>Includes prisoners who purchased or traded from a retail source, including a retail store, pawn shop, flea market, or gun show.

<sup>b</sup>Includes prisoners who purchased from a retail source, including a retail store, pawn shop, flea market, or gun show. Excludes prisoners who traded for a firearm from a retail source.

<sup>c</sup>Includes prisoners who purchased from a retail source, including a retail store, pawn shop, flea market, or gun show. Excludes prisoners who traded for a firearm from a retail source and prisoners who reported that a background check was not conducted or who were unaware as to whether one was conducted.

<sup>d</sup>Excludes private sellers other than at a retail source.

<sup>e</sup>Includes prisoners who purchased or traded a firearm from a retail source and were missing responses on whether a firearm was purchased or traded from a licensed firearm dealer or a private seller at a retail source.

<sup>f</sup>Includes prisoners who reported they carried or possessed a firearm and prisoners who reported a source or method.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

### Use and source of firearms among all state and federal prisoners

About 1% of all state and federal prisoners used a firearm during the offense that they obtained from a retail source (table 7). About 2% of prisoners possessed a firearm that they obtained from a retail source, including a retail store, pawn shop, flea market, or gun show.

Thirteen percent of all state and federal prisoners used a firearm during the offense for which they were serving time in 2016.

**TABLE 7**

**Firearm possession and use among all state and federal prisoners during the offense for which they were serving time, by type of controlling offense and source, 2016**

Controlling offense <sup>a</sup>	Percent of state and federal prisoners who—		Percent of state and federal prisoners who—	
	Possessed a firearm <sup>b</sup>	Possessed a firearm that they obtained from a retail source <sup>c</sup>	Used a firearm <sup>d</sup>	Used a firearm that they obtained from a retail source <sup>e</sup>
<b>Total</b>	20.8%	1.9%	12.8%	1.3%
<b>Violent*</b>	29.3%	2.8%	23.1%	2.3%
Homicide <sup>f</sup>	43.5	5.9	37.0	5.2
Robbery	43.5	1.8	31.5	1.3
<b>Property</b>	4.8% †	0.5% †	1.9% †	:
<b>Drug</b>	9.6% †	1.0% †	0.8% †	0.1% †
<b>Public order</b>	23.6% †	1.7% †	5.5% †	0.6% †

Note: Percentages exclude missing data. Excludes 2.8% of prisoners who were missing responses on firearm possession during the offense and 1.2% of prisoners who had a valid response to firearm possession but were missing a controlling offense. Retail source includes purchasing or trading the firearm from a retail store, pawn shop, flea market, or gun show. Use includes prisoners who showed a firearm to anyone, pointed a firearm at anyone, or discharged a firearm during the controlling offense. See appendix table 8 for standard errors.

\*Comparison group.

† Difference with comparison group is significant at the 95% confidence level across main categories, and no testing was done on subcategories (e.g., homicide).

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

<sup>a</sup>See *Methodology* for more information on how controlling offense was measured.

<sup>b</sup>Includes state and federal prisoners who reported a valid response to firearm possession.

<sup>c</sup>Includes state and federal prisoners who reported a valid response to firearm possession and source.

<sup>d</sup>Includes state and federal prisoners who reported a valid response to firearm possession and use.

<sup>e</sup>Includes state and federal prisoners who reported a valid response to firearm possession, source, and use.

<sup>f</sup>Includes murder and both non-negligent and negligent manslaughter.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

## Methodology

### Survey of Prison Inmates

The findings in this report are primarily based on data collected through the 2016 Survey of Prison Inmates (SPI). The SPI is a periodic, cross-sectional survey of the state and sentenced federal prison populations. Its primary objective is to produce national statistics of the state and sentenced federal prison populations across a variety of domains, including—but not limited to—demographic characteristics, current offense and sentence, incident characteristics, firearm possession and sources, criminal history, socioeconomic characteristics, family background, drug and alcohol use and treatment, mental and physical health and treatment, and facility programs and rule violations. RTI International served as BJS's data collection agent for the 2016 SPI under a cooperative agreement (award no. 2011-MU-MU-K070). From January through October 2016, data were collected through face-to-face interviews with prisoners using computer-assisted personal interviewing (CAPI).

Prior iterations of the SPI were known as the Survey of Inmates in State and Federal Correctional Facilities (SISFCF), which was renamed with the 2016 implementation. The first survey of state prisoners was fielded in 1974 and thereafter in 1979, 1986, 1991, 1997, and 2004. The first survey of federal prisoners was fielded in 1991, along with the survey of state prisoners, and since then both surveys have been conducted at the same time using the same questionnaire and administration.

The target population for the 2016 SPI was prisoners ages 18 and older who were held in a state prison or had a sentence to federal prison in the United States during 2016. Similar to prior iterations, the 2016 survey was a stratified two-stage sample design in which prisons were selected in the first stage and prisoners within sampled facilities were selected in the second stage. The SPI sample was selected from a universe of 2,001 unique prisons (1,808 state and 193 federal) that were either enumerated in the 2012 Census of State and Federal Adult Correctional Facilities or had opened between the completion of the census and July 2014 when the SPI sample of prisons was selected. A total of 364 prisons (306 state and 58 federal) participated in the 2016 survey out of the 385 selected (324 state and 61 federal) for interviewing. The first-stage response rate (i.e., the response rate among selected prisons) was 98.4% (98.1% among

state prisons and 100% among federal prisons).<sup>3</sup> A total of 24,848 prisoners participated (20,064 state and 4,784 federal) in the 2016 SPI based on a sample of 37,058 prisoners (30,348 state and 6,710 federal). The second-stage response rate (i.e., the response rate among selected prisoners) was 70.0% (69.3% among state prisoners and 72.8% among federal prisoners).<sup>4</sup>

Responses from interviewed prisoners in the 2016 SPI were weighted to provide national estimates. Each interviewed prisoner was assigned an initial weight corresponding to the inverse of the probability of selection within each sampled prison. A series of adjustment factors were applied to the initial weight to minimize potential bias due to non-response and to provide national estimates.

For more information on the 2016 SPI methodology, see *Methodology: Survey of Prison Inmates, 2016* (NCJ 252210, BJS web, July 2019).

### Standard errors and tests of significance

When national estimates are derived from a sample, as with the SPI, caution must be used when comparing one estimate to another or when comparing estimates between years. Although one estimate may be larger than another, estimates based on a sample rather than a complete enumeration of the population have some degree of sampling error. The sampling error of an estimate depends on several factors, including the size of the estimate, the number of completed interviews, and the intraclass correlation of the outcome within prisons. When the sampling error around an estimate is taken into account, estimates that appear different may not be statistically different. One measure of the sampling error associated with an estimate is the standard error. The standard error may vary from one estimate to the next. Standard errors in this report were estimated using Taylor Series Linearization to account for the complex design of the SPI in producing the variance estimates.

<sup>3</sup>A total of 15 prisons (12 state and 3 federal) that were sampled were deemed ineligible for the 2016 SPI. For more information, see *Methodology: Survey of Prison Inmates, 2016* (NCJ 252210, BJS web, July 2019).

<sup>4</sup>There were 10,661 sampled prisoners who were eligible for the survey but did not participate. Another 1,549 sampled prisoners were deemed ineligible for the survey. For more information, see *Methodology: Survey of Prison Inmates, 2016* (NCJ 252210, BJS web, July 2019).

Readers may use the estimates and standard errors of the estimates provided in this report to generate a 95% confidence interval around the estimates as a measure of the margin of error. Typically, multiplying the standard error by 1.96 and then adding or subtracting the result from the estimate produces the confidence interval. This interval expresses the range of values with which the true population parameter is expected to fall 95% of the time if the same method is used to select different samples.

For small samples and estimates close to 0%, the use of the standard error to construct the 95% confidence interval may not be reliable. Therefore, caution should be used when interpreting the estimates. Caution should also be used if constructing a 95% confidence interval, which would include zero in these cases, because the estimate may not be distinguishable from zero.

The standard errors have been used to compare estimates of firearm possession during the offense, firearm use during the crime, and type of firearm possessed. They have also been used to compare firearm possession among selected groups of prisoners that have been defined by demographic characteristics and controlling offense. To facilitate the analysis, rather than provide the detailed estimates for every standard error, differences in the estimates for subgroups in the relevant tables in this report have been tested and notated for significance at the 95% level of confidence. Readers should reference the tables for testing on specific findings. Unless otherwise noted, findings described in this report as higher, lower, or different passed a test at the 0.05 level of statistical significance (95% confidence level).

### Measurement of firearm possession and source

The 2016 SPI was restricted to prisoners age 18 or older at the time of the survey. Firearms analyses in this report were restricted to state and federal prisoners who were sentenced or state prisoners who were convicted but were awaiting sentencing. This report excludes prisoners who were awaiting trial (i.e., unconvicted) or a revocation hearing or who were held for other reasons. Unconvicted prisoners, such as those awaiting trial or being held for other reasons like safekeeping or a civil commitment, were excluded from this report because they were not asked questions about firearm possession to protect against self-incrimination. (See appendix 1, *Questions related to firearms in the Survey of Prison Inmates, 2016*.) Of

the estimated 1,421,700 state and federal prisoners in 2016, an estimated 287,400 were armed with a firearm, 1,094,200 were not armed with a firearm, 23,800 did not know or refused to answer the question, and 16,300 were not asked the question because they were not convicted or they stopped the interview before responding to the question.<sup>5</sup>

To determine whether prisoners possessed a firearm at the time of the offense for which they were serving time in prison, respondents were first asked whether they had carried, possessed, or used a weapon when the controlling offense occurred. Respondents could report that they carried, possessed, or used a firearm or another weapon such as a toy or BB gun, knife, other sharp object, or blunt object. Weapons other than firearms, including toy and BB guns, were excluded from this report. Multiple weapons and firearms could be reported by respondents.

Of the respondents who were asked about possessing a firearm during the offense for which they were imprisoned, about 3.0% of state and 1.7% of federal prisoners in 2016 were missing responses on firearm possession. These prisoners were excluded from the analyses in this report. All prisoners who reported they carried, possessed, or used a firearm during the offense were asked whether they had obtained the firearm because they were planning to carry, possess, or use it during the offense. They were also asked whether they showed, pointed, or fired the firearm during the offense. Respondents who reported that they fired the firearm were also asked whether they shot anyone and, if so, whether anyone they shot had died. Of the respondents who possessed a firearm during the offense, about 3.1% of state and 3.5% of federal prisoners in 2016 were missing responses on how they used the firearm. These prisoners were excluded from the analyses in figure 1, tables 1 through 3, and table 7.

To measure the type of firearm possessed by prisoners, respondents were asked whether they had carried, possessed, or used a handgun, rifle, shotgun, or some other type of firearm during the offense for which they were imprisoned. About 0.3% of state prisoners and 0.2% of federal prisoners in 2016 were missing responses on the type of firearm that they possessed. These prisoners, along with prisoners who were missing a response on firearm possession, were excluded from the analyses in table 3.

<sup>5</sup>The SPI sample was weighted to the state and federal prison populations that were eligible to be sampled in the survey. See *Methodology: Survey of Prison Inmates, 2016* (NCJ 252210, BJS web, July 2019).



To measure the source and method of obtaining the firearm possessed by prisoners during their crime, two separate questions were asked in the survey. The first question asked how the prisoners obtained the firearm, and multiple responses could be reported in the 2016 SPI. Possible responses included stole it, rented it, borrowed it from or were holding it for somebody, traded something for it, bought it, someone bought it for them, someone gave it as a gift, found it or it was at the location where the offense occurred, it was brought by someone else, or other. If respondents specified an “other” method of obtaining the firearm, then the field interviewers entered the respondents’ answers into a text field. These responses originally reported as “other” were coded to one of the existing response categories if possible.

The second question asked where prisoners obtained the firearm, and multiple responses could be reported in the 2016 SPI. Respondents received this question if they reported that they stole, rented, borrowed from or were holding for somebody, traded something for, or bought the firearm. Possible responses included gun shop or gun store; pawn shop; flea market; gun show; from a victim, family member, or friend; from a fence (a middleman for stolen goods) or underground market; off the street or from a drug dealer; in a burglary; online or the internet; or other. Fewer than 1% of state and federal prisoners reported obtaining a firearm online. These responses were included in table 5 in the “other” category due to the small number of sample cases. If respondents specified an “other” source of obtaining a firearm, then the field interviewers entered the respondents’ answers into a text field. Responses originally reported as “other” were coded to one of the existing response categories if possible.

The responses from these two questions were used to create the source and method categories in figure 1 and tables 5 through 7. Approximately 10.3% of state and 14.1% of federal prisoners in 2016 who possessed a firearm during the offense for which they were serving a sentence were missing responses on source or method of obtaining the firearm. These prisoners were excluded from figure 1 and tables 5 through 7.

Prisoners who reported purchasing or trading a firearm from a retail source (gun shop or gun store, pawn shop, flea market, or gun show) were asked if they purchased or traded it from a licensed firearm dealer or a private seller. Prisoners who reported they purchased a firearm from a retail source were further asked whether they bought the firearm under their own name and whether the seller did a firearm purchase background check before selling them the firearm. About 1% of the respondents who possessed a firearm during the offense purchased or traded it from a retail source and were missing responses on whether they bought the firearm from a licensed dealer or private seller. About 1% of respondents who possessed a firearm during the offense purchased it from a retail source and were missing responses on whether the firearm was purchased under their own name or whether a background check was conducted.

### Measurement of controlling offense

The way controlling offense was measured through the 2016 SPI, and reflected in this report, varies by sentence status and the number of offenses of prisoners:

- For sentenced prisoners and those awaiting sentencing with one offense, that offense is the controlling offense.
- For sentenced prisoners with multiple offenses and sentences, the controlling offense is the one with the longest sentence.
- For sentenced prisoners with multiple offenses and one sentence and those awaiting sentencing with multiple offenses, the controlling offense is the most serious offense. For this report, violent offenses are considered most serious, followed by property, drug, public-order, and all other offenses.

For prisoners who were convicted but awaiting sentencing, the controlling offense is the most serious offense.

## Appendix 1. Questions related to firearms in the Survey of Prison Inmates, 2016

This appendix includes the questions from the 2016 SPI that were used to measure the firearms' constructs in this report. Text that appears in capital letters in the questions was not read out loud to respondents. That text reflects programming instructions for the CAPI instrument, instructions to field interviewers who conducted the interviews, or response options that were not read out loud to respondents but were coded by the field interviewers during the interviews.

### Questions

**CJ39.** (ASK IF RESPONDENT REPORTED BEING SENTENCED IN CJ1 OR CJ3 OR IF RESPONDENT REPORTED HE/SHE WAS AWAITING SENTENCING IN CJH2A.) Did you carry, possess, or use a weapon when the (INSERT CONTROLLING OFFENSE) occurred?

- YES
- NO (SKIP TO NEXT SECTION)

**CJH1.** How many weapons did you carry, possess, or use when the (INSERT CONTROLLING OFFENSE) occurred?

- ONE
- TWO OR MORE

**CJH2.** What (INSERT "kind of weapon was it?" OR "kinds of weapons were they?") CHECK ALL THAT APPLY.

- FIREARM
- TOY OR BB GUN (INCLUDE FAKE OR REPLICA GUNS)
- KNIFE
- OTHER SHARP OBJECT (SCISSORS, ICE PICK, AX, ETC.)
- BLUNT OBJECT (ROCK, CLUB, BLACKJACK, ETC.)
- ANOTHER WEAPON
  - What kinds of weapons were they?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

**CJH3.** (ASK IF RESPONDENT REPORTED "FIREARM" IN CJH2.) How many firearms did you carry, possess, or use when the (INSERT CONTROLLING OFFENSE) occurred?

- ENTER NUMBER OF FIREARMS

**CJH4.** (ASK IF RESPONDENT REPORTED "FIREARM" IN CJH2.) What (INSERT "type of firearm was it?" OR "types of firearms were they?") CHECK ALL THAT APPLY.

- A HANDGUN
- A RIFLE
- A SHOTGUN
- SOME OTHER TYPE OF FIREARM
  - What type of firearm?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

**CJH5.** (ASK IF RESPONDENT REPORTED "FIREARM" IN CJH2.) How did you obtain the (INSERT "firearm" OR "firearms") that you carried, possessed, or used during the (INSERT CONTROLLING OFFENSE)? Any others? CHECK ALL THAT APPLY.

- STOLE IT (GO TO CJH6)
- RENTED IT (GO TO CJH6)
- BORROWED FROM OR WAS HOLDING FOR SOMEBODY (GO TO CJH6)
- TRADED SOMETHING FOR IT (GO TO CJH6)
- BOUGHT IT (GO TO CJH6)
- SOMEONE BOUGHT IT FOR ME (GO TO CJH7)
- SOMEONE GAVE IT TO ME AS A GIFT (GO TO CJH9)
- FOUND IT/WAS AT LOCATION WHERE OFFENSE OCCURRED (GO TO CJH9)
- WAS BROUGHT BY SOMEONE ELSE (GO TO CJH9)
- OTHER
  - How did you obtain the firearm that you carried, possessed, or used during the offense?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

**CJH6.** (ASK IF RESPONDENT REPORTED "FIREARM" IN CJH2 AND REPORTED IN CJH5 HE/SHE "STOLE IT", "RENTED IT", "BORROWED FROM OR WAS HOLDING FOR SOMEBODY", "TRADED SOMETHING FOR IT", OR "BOUGHT IT".) Where did you obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4)? CHECK ALL THAT APPLY.

- GUN SHOP OR GUN STORE (GO TO CJH6A)
- PAWN SHOP (GO TO CJH6A)
- FLEA MARKET (GO TO CJH6A)
- GUN SHOW (GO TO CJH6A)
- FROM THE VICTIM(S) (GO TO CJH9)
- FROM A FAMILY MEMBER (GO TO CJH9)
- FROM A FRIEND (GO TO CJH9)
- FROM A FENCE/BLACK MARKET SOURCE (GO TO CJH9)
- OFF THE STREET/FROM A DRUG DEALER (GO TO CJH9)
- IN A BURGLARY (GO TO CJH9)
- ONLINE/THE INTERNET (GO TO CJH9)
- OTHER
  - Where did you obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4)?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

*Continued on next page*

## Appendix 1. Questions related to firearms in the Survey of Prison Inmates, 2016 (continued)

**CJH6a.** (ASK IF RESPONDENT REPORTED IN CJH6 THAT THE FIREARM WAS FROM A “GUN SHOP OR GUN STORE”, “PAWN SHOP”, “FLEA MARKET”, OR “GUN SHOW”.) When you obtained the (INSERT TYPE OF FIREARM REPORTED IN CJH4) was it from a licensed firearm dealer or a private seller?

- LICENSED FIREARM DEALER
- PRIVATE SELLER

**CJH6b.** (ASK IF RESPONDENT REPORTED IN CJH5 THAT HE/SHE “BOUGHT IT” AND IN CJH6 REPORTED THAT THE FIREARM WAS FROM A “GUN SHOP OR GUN STORE”, “PAWN SHOP”, “FLEA MARKET”, OR “GUN SHOW”.) Did you buy the (INSERT TYPE OF FIREARM REPORTED IN CJH4) under your own name?

- YES
- NO
- NO PAPERWORK WAS REQUIRED

**CJH6c.** (ASK IF RESPONDENT REPORTED IN CJH5 THAT HE/SHE “BOUGHT IT” AND REPORTED IN CJH6 THAT THE FIREARM WAS FROM A “GUN SHOP OR GUN STORE”, “PAWN SHOP”, “FLEA MARKET”, OR “GUN SHOW”.) Did the seller do a firearm purchase background check before selling you the gun?

- YES
- NO

**CJH6d.** (ASK IF RESPONDENT REPORTED IN CJH5 THAT HE/SHE “BOUGHT IT” AND REPORTED IN CJH6 THAT THE FIREARM WAS FROM A “GUN SHOP OR GUN STORE”, “PAWN SHOP”, “FLEA MARKET”, OR “GUN SHOW”.) Did you buy the (INSERT TYPE OF FIREARM REPORTED IN CJH4) directly or did someone else buy it for you?

- INMATE BOUGHT
- SOMEONE ELSE BOUGHT

**CJH7.** (ASK IF RESPONDENT REPORTED “SOMEONE ELSE BOUGHT IT FOR ME” IN CJH5.) Where did that person obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4)?

- GUN SHOP OR GUN STORE
- PAWN SHOP
- FLEA MARKET
- GUN SHOW
- FROM THE VICTIM(S)
- FROM A FAMILY MEMBER
- FROM A FRIEND
- FROM A FENCE/BLACK MARKET SOURCE

- OFF THE STREET/FROM A DRUG DEALER
- IN A BURGLARY
- ONLINE/THE INTERNET
- OTHER
  - Where did that person obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4)?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

**CJH8.** (ASK IF RESPONDENT REPORTED “SOMEONE ELSE BOUGHT IT FOR ME” IN CJH5.) Why did someone else obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4) for you? CHECK ALL THAT APPLY.

- COULD NOT TRAVEL TO WHERE THE SELLER WAS
- NOT ALLOWED BECAUSE TOO YOUNG
- NOT ALLOWED BECAUSE OF CRIMINAL RECORD
- THEY COULD GET IT MORE QUICKLY OR EASILY
- DID NOT WANT TO BE LINKED TO FIREARM PURCHASE
- OTHER
  - Why did someone else obtain the (INSERT TYPE OF FIREARM REPORTED IN CJH4) for you?
    - INTERVIEWER: RECORD RESPONSE VERBATIM.

**CJH9.** Did you get the (INSERT TYPE OF FIREARM REPORTED IN CJH4) because you were **planning** to carry, possess, or use it during the (INSERT CONTROLLING OFFENSE)?

- YES
- NO

**CJH10.** Did you show or point (INSERT “the firearm” OR “any of the firearms”) at anyone during the (INSERT CONTROLLING OFFENSE)?

- YES
- NO

**CJH11.** Did you fire (INSERT “the firearm” OR “any of the firearms”) during the (INSERT CONTROLLING OFFENSE)?

- YES
- NO (SKIP TO NEXT SECTION)

**CJH12.** Did you shoot anyone?

- YES
- NO (SKIP TO NEXT SECTION)

**CJH13.** Did anyone you shot die?

- YES
- NO



**APPENDIX TABLE 1**

**Standard errors for figure 1: Percent of all state and federal inmates who had possessed or used a firearm during their offense, 2016**

Characteristic	Possessed	Used
Any gun	0.64%	0.51%
Handgun	0.59	0.46
Gun they obtained from retail source	0.13	0.12

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 2**

**Standard errors for table 1: Firearm possession and use among state and federal prisoners during the offense for which they were serving time, by type of controlling offense, 2016**

Controlling offense	Estimated number of state prisoners	Percent of state prisoners who—		Estimated number of federal prisoners	Percent of federal prisoners who—	
		Possessed a firearm	Used a firearm		Possessed a firearm	Used a firearm
<b>Total</b>	31,100	0.69%	0.57%	8,300	1.76%	0.71%
<b>Violent</b>	22,400	0.90%	0.73%	2,700	2.87%	2.83%
Homicide	10,900	1.16	1.12	700	6.53	4.75
Rape/sexual assault	9,900	0.36	0.22	600	:	:
Robbery	6,700	1.32	1.28	1,600	3.73	3.80
Assault	5,900	1.34	1.24	700	5.15	4.52
Other violent	2,100	2.03	1.73	300	8.42	:
<b>Property</b>	7,800	0.53%	0.32%	2,000	0.83%	:
Burglary	3,900	0.80	0.54	100	:	:
Other property	5,800	0.58	0.33	2,000	0.81	:
<b>Drug</b>	11,400	0.68%	0.20%	5,400	0.87%	0.21%
Trafficking	9,700	0.83	0.24	5,000	0.88	0.21
Possession	3,400	1.06	:	600	:	:
Other/unspecified drug	700	:	:	600	:	:
<b>Public order</b>	8,400	1.35%	0.58%	3,600	3.55%	0.88%
Weapons	3,000	2.02	1.70	2,700	2.02	1.60
Other public order	7,200	0.70	0.42	3,800	0.89	:
<b>Other</b>	600	:	:	300	:	:
<b>Unknown</b>	1,400	1.61%	:	400	:	:

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 3**

**Standard errors for table 2: Among state and federal prisoners who possessed a firearm during the offense for which they were serving time, extent of firearm use, 2016**

Firearm use	State prisoners	Federal prisoners	State prisoners		Federal prisoners	
			Violent offense	Non-violent offense	Violent offense	Non-violent offense
Obtained firearm because planned to use in controlling offense						
Yes	0.81%	1.57%	0.81%	2.00%	4.01%	1.88%
No	0.81	1.57	0.81	2.00	4.01	1.88
Used firearm	1.11%	1.92%	0.85%	1.83%	3.86%	1.57%
Discharged	1.34%	1.17%	1.36%	1.47%	3.58%	1.14%
Killed victim	1.28	0.75	1.40	:	2.49	:
Injured/shot victim but did not kill victim	0.73	0.55	0.86	0.89	:	:
Discharged firearm but did not shoot anyone	0.47	0.98	0.51	1.17	2.16	1.02
Did not discharge	0.97%	1.60%	1.21%	1.24%	4.99%	0.87%
Did not use firearm	1.11%	1.92%	0.85%	1.83%	3.86%	1.57%
Estimated number of prisoners who possessed a firearm (with valid data)	10,100	3,100	9,200	3,400	1,200	2,200

: Not calculated. Too few cases to provide a reliable estimate or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 4**

**Standard errors for table 3: Firearm possession and use among state and federal prisoners during the offense for which they were serving time, by type of firearm, 2016**

Type of firearm	Percent of prisoners who possessed a firearm			Percent of prisoners who used a firearm		
	All prisoners	State	Federal	All prisoners	State	Federal
Firearm	0.64	0.69%	1.76%	0.51	0.57%	0.71%
Handgun	0.59	0.64	1.63	0.46	0.51	0.67
Rifle	0.10	0.10	0.28	0.07	0.08	0.13
Shotgun	0.11	0.12	0.22	0.09	0.10	0.09
No firearm	0.64	0.69	1.76	0.51	0.57	0.71
Estimated number of prisoners (with valid data)	32,100	31,000	8,300	32,100	31,000	8,300

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 5**

**Standard errors for table 4: Firearm possession among state and federal prisoners during the offense for which they were serving time, by demographic characteristics, 2016**

Demographic characteristic	State		Federal	
	Number of prisoners	Percent of prisoners who possessed a firearm during the offense	Number of prisoners	Percent of prisoners who possessed a firearm during the offense
<b>Sex</b>				
Male	30,700	0.74%	8,200	1.88%
Female	5,200	0.96	1,300	1.00
<b>Race/Hispanic origin</b>				
White	16,500	0.64%	3,900	2.28%
Black	16,200	0.91	5,600	2.02
Hispanic	12,400	1.26	8,000	1.70
American Indian/Alaska Native	2,500	2.94	800	5.18
Asian/Native Hawaiian/Other Pacific Islander	1,600	4.69	600	:
Two or more races	5,000	1.19	1,200	3.50
<b>Age at time of survey</b>				
18–24	8,200	1.71%	1,000	5.69%
25–34	13,700	1.00	3,200	2.57
35–44	9,500	0.94	3,400	1.68
45–54	9,100	0.76	2,400	1.68
55 or older	7,700	1.02	2,200	2.02
<b>Marital status</b>				
Married	6,300	1.06%	3,100	1.77%
Widowed/widowed	2,000	2.10	400	5.93
Separated	2,700	1.34	1,200	3.11
Divorced	10,600	0.97	2,200	1.58
Never married	20,100	0.81	5,800	2.10
<b>Education</b>				
Less than high school	21,500	0.83%	6,000	2.18%
High school graduate	8,500	0.88	2,100	1.69
Some college	5,000	0.96	2,000	2.08
College degree or more	2,500	1.43	2,000	1.83
<b>Citizenship</b>				
U.S. citizen	30,000	0.69%	10,700	1.87%
Non-U.S. citizen	3,700	2.04	9,500	1.09
<b>Military service</b>				
Yes	4,800	1.07%	1,200	2.98%
No	28,700	0.72	8,200	1.80

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 6**

**Standard errors for table 5: Among state and federal prisoners who had possessed a firearm during the offense for which they were serving time, sources and methods used to obtain a firearm, 2016**

Source and method to obtain firearm	All prisoners	State	Federal
<b>Purchased/traded at retail source</b>	0.66%	0.70%	2.07%
Gun shop/store	0.54	0.56	1.87
Pawn shop	0.27	0.29	0.62
Flea market	0.13	:	:
Gun show	0.16	0.17	0.44
<b>Obtained from individual</b>	0.87%	0.94%	2.02%
Purchased/traded from family/friend	0.59	0.65	1.27
Rented/borrowed from family/friend	0.47	0.52	0.54
Gift/purchased for prisoner	0.69	0.75	1.40
<b>Off the street/underground market</b>	1.07%	1.13%	3.26%
<b>Theft</b>	0.48%	0.53%	0.79%
From burglary	0.22	0.24	:
From retail source	0.07	:	:
From family/friend	0.26	0.29	:
Unspecified theft	0.31	0.34	0.53
<b>Other source</b>	0.78%	0.85%	1.80%
Found at location of crime/victim	0.50	0.53	1.31
Brought by someone else	0.45	0.49	0.87
Other	0.51	0.55	1.40
<b>Multiple sources</b>	0.27%	0.29%	0.50%
<b>Estimated number of prisoners who possessed a firearm, excluding prisoners who did not report source</b>	9,900	9,500	2,800

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

**APPENDIX TABLE 7**

**Standard errors for table 6: Among state and federal prisoners who had possessed a firearm during the offense for which they were serving time, processes used to obtain a firearm, 2016**

Process to obtain firearm	All prisoners	State	Federal
<b>Not purchased or traded at retail source</b>	0.66%	0.70%	2.07%
<b>Purchased or traded at retail source</b>	0.66%	0.70%	2.07%
Licensed firearm dealer at retail source	0.60	0.63	2.08
Purchased under own name	0.54	0.57	1.89
Backgroundcheck was reportedly conducted	0.54	0.56	1.93
Private seller at retail source	0.19	0.20	0.63
Unknown	0.21	0.24	:
<b>Estimated number of prisoners who possessed a firearm (with valid data)</b>	9,900	9,500	2,800

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.

## APPENDIX TABLE 8

Standard errors for table 7: Firearm possession and use among all state and federal prisoners during the offense for which they were serving time, by type of controlling offense and source, 2016

Controlling offense	Percent of state and federal prisoners who—		Percent of state and federal prisoners who—	
	Possessed a firearm	Possessed a firearm that they obtained from a retail source	Used a firearm	Used a firearm that they obtained from a retail source
Total	0.64%	0.13%	0.51%	0.12%
Violent	0.88%	0.23%	0.72%	0.21%
Homicide	1.14	0.63	1.10	0.62
Robbery	1.25	0.29	1.22	0.25
Property	0.50%	0.15%	0.30%	:
Drug	0.52%	0.17%	0.15%	0.04%
Public order	1.35%	0.27%	0.48%	0.17%

: Not calculated. Too few cases to provide a reliable estimate, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, Survey of Prison Inmates, 2016.



The Bureau of Justice Statistics of the U.S. Department of Justice is the principal federal agency responsible for measuring crime, criminal victimization, criminal offenders, victims of crime, correlates of crime, and the operation of criminal and civil justice systems at the federal, state, tribal, and local levels. BJS collects, analyzes, and disseminates reliable statistics on crime and justice systems in the United States, supports improvements to state and local criminal justice information systems, and participates with national and international organizations to develop and recommend national standards for justice statistics. Jeffrey H. Anderson is the director.

This report was written by Mariel Alper and Lauren Glaze of BJS. Mariel Alper conducted statistical analyses. Marcus Berzofsky and John Bunker of RTI International provided statistical review. Danielle Kaeble, Laura Maruschak, Todd Minton, and Stephanie Mueller verified the report. Lauren Glaze was the BJS project manager for the 2016 Survey of Prison Inmates.

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# EXHIBIT 114

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# **An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003**

**Report to the National Institute of Justice,  
United States Department of Justice**

By

**Christopher S. Koper**  
(Principal Investigator)

With

Daniel J. Woods and Jeffrey A. Roth

**June 2004**

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## PREFACE

Gun violence continues to be one of America's most serious crime problems. In 2000, over 10,000 persons were murdered with firearms and almost 49,000 more were shot in the course of over 340,000 assaults and robberies with guns (see the Federal Bureau of Investigation's annual *Uniform Crime Reports* and Simon et al., 2002). The total costs of gun violence in the United States – including medical, criminal justice, and other government and private costs – are on the order of at least \$6 to \$12 billion per year and, by more controversial estimates, could be as high as \$80 billion per year (Cook and Ludwig, 2000).

However, there has been good news in recent years. Police statistics and national victimization surveys show that since the early 1990s, gun crime has plummeted to some of the lowest levels in decades (see the *Uniform Crime Reports* and Rennison, 2001). Have gun controls contributed to this decline, and, if so, which ones?

During the last decade, the federal government has undertaken a number of initiatives to suppress gun crime. These include, among others, the establishment of a national background check system for gun buyers (through the Brady Act), reforms of the licensing system for firearms dealers, a ban on juvenile handgun possession, and Project Safe Neighborhoods, a collaborative effort between U.S. Attorneys and local authorities to attack local gun crime problems and enhance punishment for gun offenders.

Perhaps the most controversial of these federal initiatives was the ban on semiautomatic assault weapons and large capacity ammunition magazines enacted as Title XI, Subtitle A of the *Violent Crime Control and Law Enforcement Act of 1994*. This law prohibits a relatively small group of weapons considered by ban advocates to be particularly dangerous and attractive for criminal purposes. In this report, we investigate the ban's impacts on gun crime through the late 1990s and beyond. This study updates a prior report on the short-term effects of the ban (1994-1996) that members of this research team prepared for the U.S. Department of Justice and the U.S. Congress (Roth and Koper, 1997; 1999).

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## **1. IMPACTS OF THE FEDERAL ASSAULT WEAPONS BAN, 1994-2003: KEY FINDINGS AND CONCLUSIONS**

This overview presents key findings and conclusions from a study sponsored by the National Institute of Justice to investigate the effects of the federal assault weapons ban. This study updates prior reports to the National Institute of Justice and the U.S. Congress on the assault weapons legislation.

### **The Ban Attempts to Limit the Use of Guns with Military Style Features and Large Ammunition Capacities**

- Title XI, Subtitle A of the Violent Crime Control and Law Enforcement Act of 1994 imposed a 10-year ban on the “manufacture, transfer, and possession” of certain semiautomatic firearms designated as assault weapons (AWs). The ban is directed at semiautomatic firearms having features that appear useful in military and criminal applications but unnecessary in shooting sports or self-defense (examples include flash hiders, folding rifle stocks, and threaded barrels for attaching silencers). The law bans 18 models and variations by name, as well as revolving cylinder shotguns. It also has a “features test” provision banning other semiautomatics having two or more military-style features. In sum, the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) has identified 118 models and variations that are prohibited by the law. A number of the banned guns are foreign semiautomatic rifles that have been banned from importation into the U.S. since 1989.
- The ban also prohibits most ammunition feeding devices holding more than 10 rounds of ammunition (referred to as large capacity magazines, or LCMs). An LCM is arguably the most functionally important feature of most AWs, many of which have magazines holding 30 or more rounds. The LCM ban’s reach is broader than that of the AW ban because many non-banned semiautomatics accept LCMs. Approximately 18% of civilian-owned firearms and 21% of civilian-owned handguns were equipped with LCMs as of 1994.
- The ban exempts AWs and LCMs manufactured before September 13, 1994. At that time, there were upwards of 1.5 million privately owned AWs in the U.S. and nearly 25 million guns equipped with LCMs. Gun industry sources estimated that there were 25 million pre-ban LCMs available in the U.S. as of 1995. An additional 4.7 million pre-ban LCMs were imported into the country from 1995 through 2000, with the largest number in 1999.
- Arguably, the AW-LCM ban is intended to reduce gunshot victimizations by limiting the national stock of semiautomatic firearms with large ammunition capacities – which enable shooters to discharge many shots rapidly – and other features conducive to criminal uses. The AW provision targets a relatively small number of weapons based on features that have little to do with the weapons’

operation, and removing those features is sufficient to make the weapons legal. The LCM provision limits the ammunition capacity of non-banned firearms.

### **The Banned Guns and Magazines Were Used in Up to A Quarter of Gun Crimes Prior to the Ban**

- AWs were used in only a small fraction of gun crimes prior to the ban: about 2% according to most studies and no more than 8%. Most of the AWs used in crime are assault pistols rather than assault rifles.
- LCMs are used in crime much more often than AWs and accounted for 14% to 26% of guns used in crime prior to the ban.
- AWs and other guns equipped with LCMs tend to account for a higher share of guns used in murders of police and mass public shootings, though such incidents are very rare.

### **The Ban's Success in Reducing Criminal Use of the Banned Guns and Magazines Has Been Mixed**

- Following implementation of the ban, the share of gun crimes involving AWs declined by 17% to 72% across the localities examined for this study (Baltimore, Miami, Milwaukee, Boston, St. Louis, and Anchorage), based on data covering all or portions of the 1995-2003 post-ban period. This is consistent with patterns found in national data on guns recovered by police and reported to ATF.
- The decline in the use of AWs has been due primarily to a reduction in the use of assault pistols (APs), which are used in crime more commonly than assault rifles (ARs). There has not been a clear decline in the use of ARs, though assessments are complicated by the rarity of crimes with these weapons and by substitution of post-ban rifles that are very similar to the banned AR models.
- However, the decline in AW use was offset throughout at least the late 1990s by steady or rising use of other guns equipped with LCMs in jurisdictions studied (Baltimore, Milwaukee, Louisville, and Anchorage). The failure to reduce LCM use has likely been due to the immense stock of exempted pre-ban magazines, which has been enhanced by recent imports.

### **It is Premature to Make Definitive Assessments of the Ban's Impact on Gun Crime**

- Because the ban has not yet reduced the use of LCMs in crime, we cannot clearly credit the ban with any of the nation's recent drop in gun violence. However, the ban's exemption of millions of pre-ban AWs and LCMs ensured that the effects

of the law would occur only gradually. Those effects are still unfolding and may not be fully felt for several years into the future, particularly if foreign, pre-ban LCMs continue to be imported into the U.S. in large numbers.

### **The Ban's Reauthorization or Expiration Could Affect Gunshot Victimization, But Predictions are Tenuous**

- Should it be renewed, the ban's effects on gun violence are likely to be small at best and perhaps too small for reliable measurement. AWs were rarely used in gun crimes even before the ban. LCMs are involved in a more substantial share of gun crimes, but it is not clear how often the outcomes of gun attacks depend on the ability of offenders to fire more than ten shots (the current magazine capacity limit) without reloading.
- Nonetheless, reducing criminal use of AWs and especially LCMs could have non-trivial effects on gunshot victimizations. The few available studies suggest that attacks with semiautomatics – including AWs and other semiautomatics equipped with LCMs – result in more shots fired, more persons hit, and more wounds inflicted per victim than do attacks with other firearms. Further, a study of handgun attacks in one city found that 3% of the gunfire incidents resulted in more than 10 shots fired, and those attacks produced almost 5% of the gunshot victims.
- Restricting the flow of LCMs into the country from abroad may be necessary to achieve desired effects from the ban, particularly in the near future. Whether mandating further design changes in the outward features of semiautomatic weapons (such as removing all military-style features) will produce measurable benefits beyond those of restricting ammunition capacity is unknown. Past experience also suggests that Congressional discussion of broadening the AW ban to new models or features would raise prices and production of the weapons under discussion.
- If the ban is lifted, gun and magazine manufacturers may reintroduce AW models and LCMs, perhaps in substantial numbers. In addition, pre-ban AWs may lose value and novelty, prompting some of their owners to sell them in undocumented secondhand markets where they can more easily reach high-risk users, such as criminals, terrorists, and other potential mass murderers. Any resulting increase in crimes with AWs and LCMs might increase gunshot victimizations for the reasons noted above, though this effect could be difficult to measure.



## 2. PROVISIONS OF THE ASSAULT WEAPONS BAN

### 2.1. Assault Weapons

Enacted on September 13, 1994, Title XI, Subtitle A of the *Violent Crime Control and Law Enforcement Act of 1994* imposes a 10-year ban on the “manufacture, transfer, and possession” of certain semiautomatic firearms designated as assault weapons (AWs).<sup>1</sup> The AW ban is not a prohibition on all semiautomatics. Rather, it is directed at semiautomatics having features that appear useful in military and criminal applications but unnecessary in shooting sports or self-defense. Examples of such features include pistol grips on rifles, flash hiders, folding rifle stocks, threaded barrels for attaching silencers, and the ability to accept ammunition magazines holding large numbers of bullets.<sup>2</sup> Indeed, several of the banned guns (e.g., the AR-15 and Avtomat Kalashnikov models) are civilian copies of military weapons and accept ammunition magazines made for those military weapons.

As summarized in Table 2-1, the law specifically prohibits nine narrowly defined groups of pistols, rifles, and shotguns. A number of the weapons are foreign rifles that the federal government has banned from importation into the U.S. since 1989. Exact copies of the named AWs are also banned, regardless of their manufacturer. In addition, the ban contains a generic “features test” provision that generally prohibits other semiautomatic firearms having two or more military-style features, as described in Table 2-2. In sum, the federal Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) has identified 118 model and caliber variations that meet the AW criteria established by the ban.<sup>3</sup>

Figures 2-1 and 2-2 illustrate a few prominent AWs and their features. Figure 2-1 displays the Intratec TEC-9 assault pistol, the AW most frequently used in crime (e.g., see Roth and Koper 1997, Chapter 2). Figure 2-2 depicts the AK-47 assault rifle, a weapon of Soviet design. There are many variations of the AK-47 produced around the world, not all of which have the full complement of features illustrated in Figure 2-2.

---

<sup>1</sup> A semiautomatic weapon fires one bullet for each squeeze of the trigger. After each shot, the gun automatically loads the next bullet and cocks itself for the next shot, thereby permitting a somewhat faster rate of fire relative to non-automatic firearms. Semiautomatics are not to be confused with fully automatic weapons (i.e., machine guns), which fire continuously as long as the trigger is held down. Fully automatic weapons have been illegal to own in the United States without a federal permit since 1934.

<sup>2</sup> Ban advocates stress the importance of pistol grips on rifles and heat shrouds or forward handgrips on pistols, which in combination with large ammunition magazines enable shooters to discharge high numbers of bullets rapidly (in a “spray fire” fashion) while maintaining control of the firearm (Violence Policy Center, 2003). Ban opponents, on the other hand, argue that AW features also serve legitimate purposes for lawful gun users (e.g., see Kopel, 1995).

<sup>3</sup> This is based on AWs identified by ATF’s Firearms Technology Branch as of December 1997.

**Table 2-1. Firearms Banned by the Federal Assault Weapons Ban**

<b>Firearm</b>	<b>Description</b>	<b>1993 Blue Book Price</b>	<b>Pre-Ban Federal Legal Status</b>	<b>Examples of Legal Substitutes</b>
Avtomat Kalashnikov (AK) (by Norinco, Mitchell, Poly Technologies)	Chinese, Russian, other foreign and domestic: .223 or 7.62x39mm caliber, semiauto. rifle; 5, 10, or 30 shot magazine, may be supplied with bayonet	\$550 (generic import); add 10-15% for folding stock models	Imports banned in 1989.	Norinco NHM 90/91 <sup>1</sup>
Uzi, Galil	Israeli: 9mm, .41, or .45 caliber semiauto. carbine, mini-carbine, or pistol. Magazine capacity of 16, 20, or 25, depending on model and type (10 or 20 on pistols).	\$550-\$1050 (Uzi) \$875-\$1150 (Galil)	Imports banned in 1989	Uzi Sporter <sup>2</sup>
Beretta AR-70	Italian: .222 or .223 caliber semiauto. paramilitary design rifle; 5, 8, or 30 shot magazine.	\$1050	Imports banned in 1989.	
Colt AR-15	Domestic: primarily .223 caliber paramilitary rifle or carbine; 5 shot magazines, often comes with two 5-shot detachable magazines. Exact copies by DPMS, Eagle, Olympic, and others.	\$825-\$1325	Legal (civilian version of military M-16)	Colt Sporter, Match H-Bar, Target models
Fabrique National FN/FAL, FN/LAR, FNC	Belgian design: .308 caliber semiauto. rifle or .223 combat carbine with 30 shot magazine. Rifle comes with flash hider, 4 position fire selector on automatic models. Discontinued in 1988.	\$1100-\$2500	Imports banned in 1989.	L1A1 Sporter (FN, Century) <sup>2</sup>
Steyr AUG	Austrian: .223/5.56mm caliber semiauto. paramilitary design rifle.	\$2500	Imports banned in 1989	
SWD M-10, 11, 11/9, 12	Domestic: 9mm, .380, or .45 caliber paramilitary design semiauto. pistol; 32 shot magazine. Also available in semiauto. carbine and fully automatic variations.	\$215 (M-11/9)	Legal	Cobray PM11, 12
TEC-9, DC9, 22	Domestic: 9mm caliber semiauto. paramilitary design pistol, 10 or 32 shot magazine.; .22 caliber semiauto. paramilitary design pistol, 30 shot magazine.	\$145-\$295	Legal	TEC-AB
Revolving Cylinder Shotguns	Domestic: 12 gauge, 12 shot rotary magazine; paramilitary configuration	\$525 (Street Sweeper)	Legal	

<sup>1</sup> Imports were halted in 1994 under the federal embargo on the importation of firearms from China.

<sup>2</sup> Imports banned by federal executive order, April 1998.

**Table 2-2. Features Test of the Federal Assault Weapons Ban**

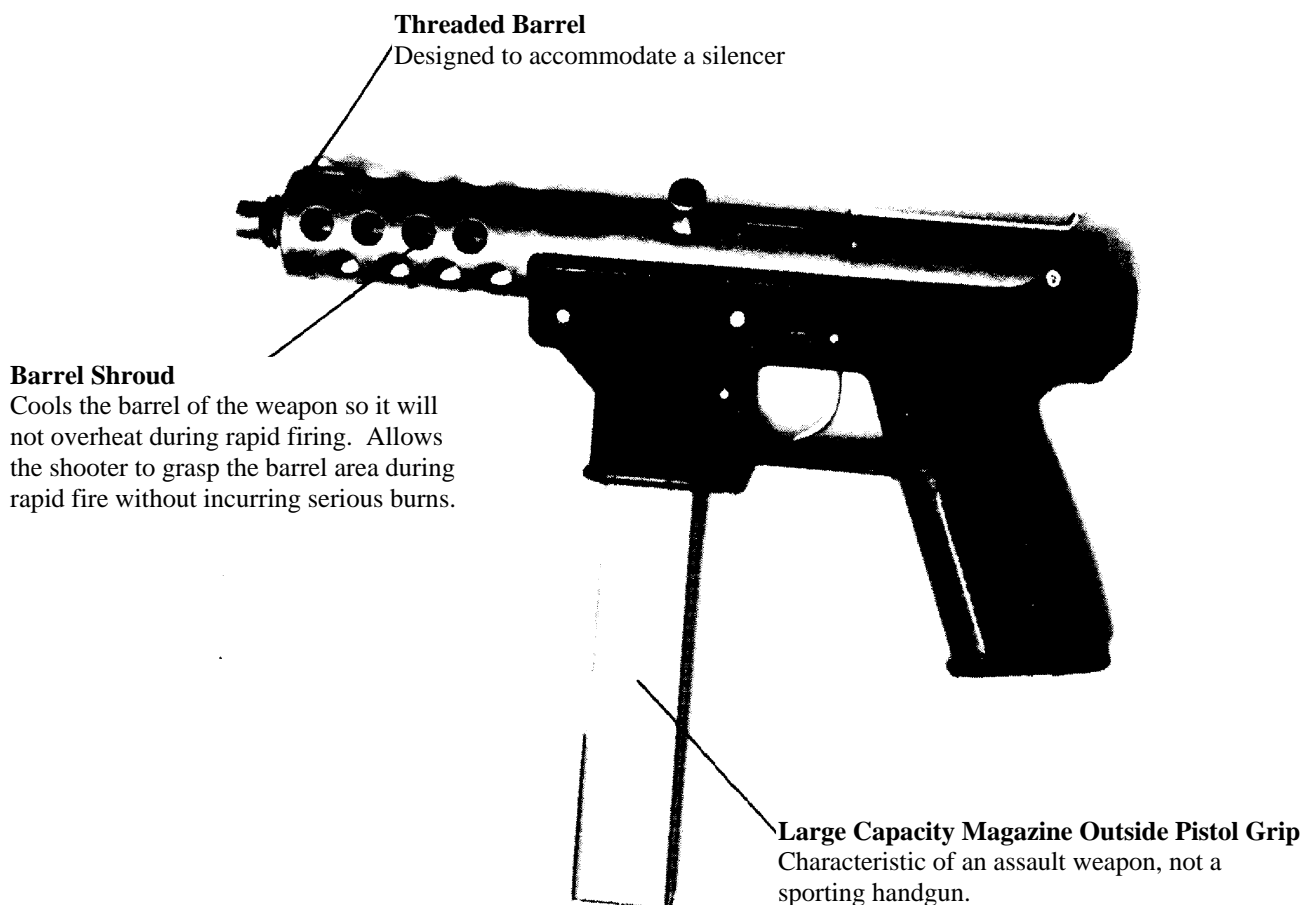
<b>Weapon Category</b>	<b>Military-Style Features (Two or more qualify a firearm as an assault weapon)</b>
Semiautomatic pistols accepting detachable magazines:	<ol style="list-style-type: none"> <li>1) ammunition magazine that attaches outside the pistol grip</li> <li>2) threaded barrel capable of accepting a barrel extender, flash hider, forward handgrip, or silencer</li> <li>3) heat shroud attached to or encircling the barrel</li> <li>4) weight of more than 50 ounces unloaded</li> <li>5) semiautomatic version of a fully automatic weapon</li> </ol>
Semiautomatic rifles accepting detachable magazines:	<ol style="list-style-type: none"> <li>1) folding or telescoping stock</li> <li>2) pistol grip that protrudes beneath the firing action</li> <li>3) bayonet mount</li> <li>4) flash hider or threaded barrel designed to accommodate one</li> <li>5) grenade launcher</li> </ol>
Semiautomatic shotguns:	<ol style="list-style-type: none"> <li>1) folding or telescoping stock</li> <li>2) pistol grip that protrudes beneath the firing action</li> <li>3) fixed magazine capacity over 5 rounds</li> <li>4) ability to accept a detachable ammunition magazine</li> </ol>

## 2.2. Large Capacity Magazines

In addition, the ban prohibits most ammunition feeding devices holding more than 10 rounds of ammunition (referred to hereafter as large capacity magazines, or LCMs).<sup>4</sup> Most notably, this limits the capacity of detachable ammunition magazines for semiautomatic firearms. Though often overlooked in media coverage of the law, this provision impacted a larger share of the gun market than did the ban on AWs. Approximately 40 percent of the semiautomatic handgun models and a majority of the semiautomatic rifle models being manufactured and advertised prior to the ban were sold with LCMs or had a variation that was sold with an LCM (calculated from Murtz et al., 1994). Still others could accept LCMs made for other firearms and/or by other manufacturers. A national survey of gun owners found that 18% of all civilian-owned firearms and 21% of civilian-owned handguns were equipped with magazines having 10 or more rounds as of 1994 (Cook and Ludwig, 1996, p. 17). The AW provision did not affect most LCM-compatible guns, but the LCM provision limited the capacities of their magazines to 10 rounds.

<sup>4</sup> Technically, the ban prohibits any magazine, belt, drum, feed strip, or similar device that has the capacity to accept more than 10 rounds of ammunition, or which can be readily converted or restored to accept more than 10 rounds of ammunition. The ban exempts attached tubular devices capable of operating only with .22 caliber rimfire (i.e., low velocity) ammunition.

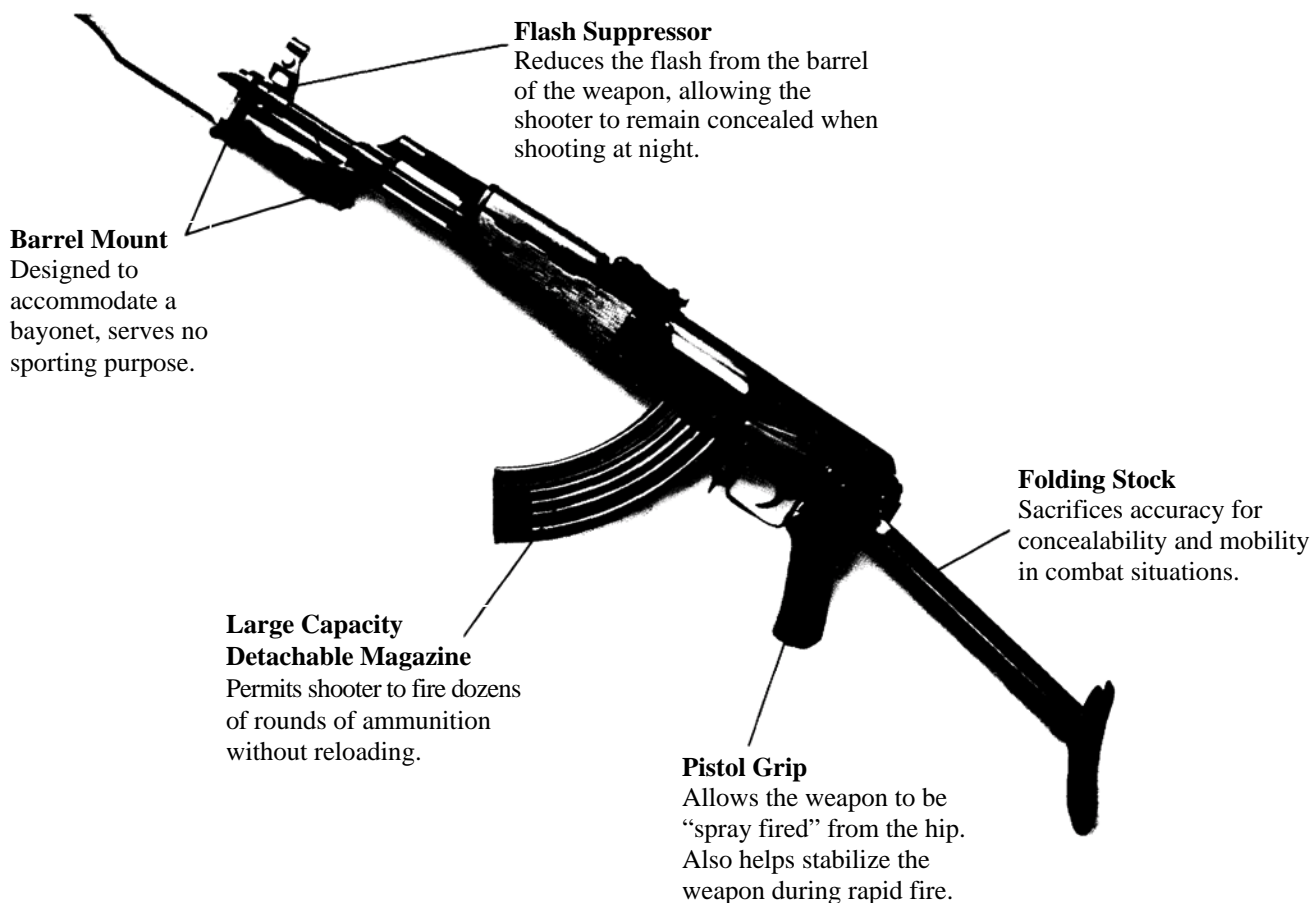
**Figure 2-1. Features of Assault Weapons:  
The Intratec TEC-9 Assault Pistol**



Adapted from exhibit of the Center to Prevent Handgun Violence.

As discussed in later chapters, an LCM is perhaps the most functionally important feature of many AWs. This point is underscored by the AW ban's exemptions for semiautomatic rifles that cannot accept a detachable magazine that holds more than five rounds of ammunition and semiautomatic shotguns that cannot hold more than five rounds in a fixed or detachable magazine. As noted by the U.S. House of Representatives, most prohibited AWs came equipped with magazines holding 30 rounds and could accept magazines holding as many as 50 or 100 rounds (U.S. Department of the Treasury, 1998, p. 14). Also, a 1998 federal executive order (discussed below) banned further importation of foreign semiautomatic rifles capable of accepting LCMs made for military rifles. Accordingly, the magazine ban plays an important role in the logic and interpretations of the analyses presented here.

**Figure 2-2. Features of Assault Weapons:  
The AK-47 Assault Rifle**



Adapted from exhibit of the Center to Prevent Handgun Violence.

### **2.3. Foreign Rifles Accepting Large Capacity Military Magazines**

In April of 1998, the Clinton administration broadened the range of the AW ban by prohibiting importation of an additional 58 foreign semiautomatic rifles that were still legal under the 1994 law but that can accept LCMs made for military assault rifles like the AK-47 (U.S. Department of the Treasury, 1998).<sup>5</sup> Figure 2-3 illustrates a few such rifles (hereafter, LCMM rifles) patterned after the banned AK-47 pictured in Figure 2-2. The LCMM rifles in Figure 2-3 do not possess the military-style features incorporated into the AK-47 (such as pistol grips, flash suppressors, and bayonet mounts), but they accept LCMs made for AK-47s.<sup>6</sup>

<sup>5</sup> In the civilian context, AWs are semiautomatic firearms. Many semiautomatic AWs are patterned after military firearms, but the military versions are capable of semiautomatic and fully automatic fire.

<sup>6</sup> Importation of some LCMM rifles, including a number of guns patterned after the AK-47, was halted in 1994 due to trade sanctions against China (U.S. Department of the Treasury, 1998).

**Figure 2-3. Foreign Semiautomatic Rifles Capable of Accepting Large Capacity Military  
Magazines: AK47 Copies Banned by Executive Order in 1998**



MISR



ARM



MAK90



WUM 1

Taken from U.S. Department of the Treasury (1998)

## 2.4. Ban Exemptions

### 2.4.1. *Guns and Magazines Manufactured Prior to the Ban*

The ban contains important exemptions. AWs and LCMs manufactured before the effective date of the ban are “grandfathered” and thus legal to own and transfer. Around 1990, there were an estimated 1 million privately owned AWs in the U.S. (about 0.5% of the estimated civilian gun stock) (Cox Newspapers, 1989, p. 1; American Medical Association Council on Scientific Affairs, 1992), though those counts probably did not correspond exactly to the weapons prohibited by the 1994 ban. The leading domestic AW producers manufactured approximately half a million AWs from 1989 through 1993, representing roughly 2.5% of all guns manufactured in the U.S. during that time (see Chapter 5).

We are not aware of any precise estimates of the pre-ban stock of LCMs, but gun owners in the U.S. possessed an estimated 25 million guns that were equipped with LCMs or 10-round magazines in 1994 (Cook and Ludwig, 1996, p. 17), and gun industry sources estimated that, including aftermarket items for repairing and extending magazines, there were at least 25 million LCMs available in the United States as of 1995 (Gun Tests, 1995, p. 30). As discussed in Chapter 7, moreover, an additional 4.8 million pre-ban LCMs were imported into the U.S. from 1994 through 2000 under the grandfathering exemption.

### 2.4.2. *Semiautomatics With Fewer or No Military Features*

Although the law bans “copies or duplicates” of the named gun makes and models, federal authorities have emphasized exact copies. Relatively cosmetic changes, such as removing a flash hider or bayonet mount, are sufficient to transform a banned weapon into a legal substitute, and a number of manufacturers now produce modified, legal versions of some of the banned guns (examples are listed in Table 2-1). In general, the AW ban does not apply to semiautomatics possessing no more than one military-style feature listed under the ban’s features test provision.<sup>7</sup> For instance, prior to going out of business, Intratec, makers of the banned TEC-9 featured in Figure 2-1, manufactured an AB-10 (“after ban”) model that does not have a threaded barrel or a barrel shroud but is identical to the TEC-9 in other respects, including the ability to accept an ammunition magazine outside the pistol grip (Figure 2-4). As shown in the illustration, the AB-10 accepts grandfathered, 32-round magazines made for the TEC-9, but post-ban magazines produced for the AB-10 must be limited to 10 rounds.

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<sup>7</sup> Note, however, that firearms imported into the country must still meet the “sporting purposes test” established under the federal Gun Control Act of 1968. In 1989, ATF determined that foreign semiautomatic rifles having any one of a number of named military features (including those listed in the features test of the 1994 AW ban) fail the sporting purposes test and cannot be imported into the country. In 1998, the ability to accept an LCM made for a military rifle was added to the list of disqualifying features. Consequently, it is possible for foreign rifles to pass the features test of the federal AW ban but not meet the sporting purposes test for imports (U.S. Department of the Treasury, 1998).



Another example is the Colt Match Target H-Bar rifle (Figure 2-5), which is a legalized version of the banned AR-15 (see Table 2-1). AR-15 type rifles are civilian weapons patterned after the U.S. military's M-16 rifle and were the assault rifles most commonly used in crime before the ban (Roth and Koper, 1997, Chapter 2). The post-ban version shown in Figure 2-5 (one of several legalized variations on the AR-15) is essentially identical to pre-ban versions of the AR-15 but does not have accessories like a flash hider, threaded barrel, or bayonet lug. The one remaining military feature on the post-ban gun is the pistol grip. This and other post-ban AR-15 type rifles can accept LCMs made for the banned AR15, as well as those made for the U.S. military's M-16. However, post-ban magazines manufactured for these guns must hold fewer than 11 rounds.

The LCMM rifles discussed above constituted another group of legalized AW-type weapons until 1998, when their importation was prohibited by executive order. Finally, the ban includes an appendix that exempts by name several hundred models of rifles and shotguns commonly used in hunting and recreation, 86 of which are semiautomatics. While the exempted semiautomatics generally lack the military-style features common to AWs, many take detachable magazines, and some have the ability to accept LCMs.<sup>8</sup>

## 2.5. Summary

In the broadest sense, the AW-LCM ban is intended to limit crimes with semiautomatic firearms having large ammunition capacities – which enable shooters to discharge high numbers of shots rapidly – and other features conducive to criminal applications. The gun ban provision targets a relatively small number of weapons based on outward features or accessories that have little to do with the weapons' operation. Removing some or all of these features is sufficient to make the weapons legal. In other respects (e.g., type of firing mechanism, ammunition fired, and the ability to accept a detachable magazine), AWs do not differ from other legal semiautomatic weapons. The LCM provision of the law limits the ammunition capacity of non-banned firearms.

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<sup>8</sup> Legislators inserted a number of amendments during the drafting process to broaden the consensus behind the bill (Lennett 1995). Among changes that occurred during drafting were: dropping a requirement to register post-ban sales of the grandfathered guns, dropping a ban on "substantial substitutes" as well as "exact copies" of the banned weapons, shortening the list of named makes and models covered by the ban, adding the appendix list of exempted weapons, and mandating the first impact study of the ban that is discussed below.



**Figure 2-4. Post-Ban, Modified Versions of Assault Weapons:  
The Intratec AB (“After Ban”) Model (See Featured Firearm)**

**AMERICAN PRIDE**

**BRAND NEW**

**AMERICAN MADE**

**Introducing The AB-10 Stainless Steel 9mm Pistol!**  
The New non-threaded AB-10 Stainless Steel Firearm is now available with a 32-round Stainless Steel capacity magazine. This new edition is one of the most affordable and reliable firearms on the market! In Standard Blue or Stainless Steel, the AB-10 series makes an ideal firearm for self-defense or recreation.  
*A super profit-maker!*

**"Cat"-9**  
9mm, Luger Magazine 7+1

**Sport -22**  
Non-Threaded Barrel  
10-Round Magazine

**"Cat"-9/.380 Auto**  
Magazine 7+1

**"Cat" -45**  
45 A.C.P.  
Magazine 6+1

**Pro-"tec"-tor Series**  
Protec 25B, 8-Round Mag.  
Protec 25KB, 8-Round Mag.

**INTRATEC**  
12405 S.W. 130th St., Miami, FL 33186  
<http://amfire.com/intratec.html>  
Fax: (305) 253-7207

**Figure 2-5. Post-Ban, Modified Versions of Assault Weapons:  
The Colt Match Target HBAR Model**



### **3. CRIMINAL USE OF ASSAULT WEAPONS AND LARGE CAPACITY MAGAZINES BEFORE THE BAN**

During the 1980s and early 1990s, AWs and other semiautomatic firearms equipped with LCMs were involved in a number of highly publicized mass murder incidents that raised public concern about the accessibility of high powered, military-style weaponry and other guns capable of discharging high numbers of bullets in a short period of time (Cox Newspapers, 1989; Kleck, 1997, pp.124-126,144; Lenett, 1995). In one of the worst mass murders ever committed in the U.S., for example, James Huberty killed 21 persons and wounded 19 others in a San Ysidro, California MacDonald's restaurant on July 18, 1984 using an Uzi carbine, a shotgun, and another semiautomatic handgun. On September 14, 1989, Joseph Wesbecker, armed with an AK-47 rifle, two MAC-11 handguns, and a number of other firearms, killed 7 persons and wounded 15 others at his former workplace in Louisville, Kentucky before taking his own life. Another particularly notorious incident that precipitated much of the recent debate over AWs occurred on January 17, 1989 when Patrick Purdy used a civilian version of the AK-47 military rifle to open fire on a schoolyard in Stockton, California, killing 5 children and wounding 29 persons.

There were additional high profile incidents in which offenders using semiautomatic handguns with LCMs killed and wounded large numbers of persons. Armed with two handguns having LCMs (and reportedly a supply of extra LCMs), a rifle, and a shotgun, George Hennard killed 22 people and wounded another 23 in Killeen, Texas in October 1991. In a December 1993 incident, a gunman named Colin Ferguson, armed with a handgun and LCMs, opened fire on commuters on a Long Island train, killing 5 and wounding 17.

Indeed, AWs or other semiautomatics with LCMs were involved in 6, or 40%, of 15 mass shooting incidents occurring between 1984 and 1993 in which six or more persons were killed or a total of 12 or more were wounded (Kleck, 1997, pp.124-126, 144). Early studies of AWs, though sometimes based on limited and potentially unrepresentative data, also suggested that AWs recovered by police were often associated with drug trafficking and organized crime (Cox Newspapers, 1989; also see Roth and Koper, 1997, Chapter 5), fueling a perception that AWs were guns of choice among drug dealers and other particularly violent groups. All of this intensified concern over AWs and other semiautomatics with large ammunition capacities and helped spur the passage of AW bans in California, New Jersey, Connecticut, and Hawaii between 1989 and 1993, as well as the 1989 federal import ban on selected semiautomatic rifles. Maryland also passed AW legislation in 1994, just a few months prior to the passage of the 1994 federal AW ban.<sup>9</sup>

Looking at the nation's gun crime problem more broadly, however, AWs and LCMs were used in only a minority of gun crimes prior to the 1994 federal ban, and AWs were used in a particularly small percentage of gun crimes.

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<sup>9</sup> A number of localities around the nation also passed AW bans during this period.

### 3.1. Criminal Use of Assault Weapons

Numerous studies have examined the use of AWs in crime prior to the federal ban. The definition of AWs varied across the studies and did not always correspond exactly to that of the 1994 law (in part because a number of the studies were done prior to 1994). In general, however, the studies appeared to focus on various semiautomatics with detachable magazines and military-style features. According to these accounts, AWs typically accounted for up to 8% of guns used in crime, depending on the specific AW definition and data source used (e.g., see Beck et al., 1993; Hargarten et al., 1996; Hutson et al., 1994; 1995; McGonigal et al., 1993; New York State Division of Criminal Justice Services, 1994; Roth and Koper, 1997, Chapters 2, 5, 6; Zawitz, 1995). A compilation of 38 sources indicated that AWs accounted for 2% of crime guns on average (Kleck, 1997, pp.112, 141-143).<sup>10</sup>

Similarly, the most common AWs prohibited by the 1994 federal ban accounted for between 1% and 6% of guns used in crime according to most of several national and local data sources examined for this and our prior study (see Chapter 6 and Roth and Koper, 1997, Chapters 5, 6):

- Baltimore (all guns recovered by police, 1992-1993): 2%
- Miami (all guns recovered by police, 1990-1993): 3%
- Milwaukee (guns recovered in murder investigations, 1991-1993): 6%
- Boston (all guns recovered by police, 1991-1993): 2%
- St. Louis (all guns recovered by police, 1991-1993): 1%
- Anchorage, Alaska (guns used in serious crimes, 1987-1993): 4%
- National (guns recovered by police and reported to ATF, 1992-1993): 5%<sup>11</sup>
- National (gun thefts reported to police, 1992-Aug. 1994): 2%
- National (guns used in murders of police, 1992-1994): 7-9%<sup>12</sup>
- National (guns used in mass murders of 4 or more persons, 1992-1994): 4-13%<sup>13</sup>

Although each of the sources cited above has limitations, the estimates consistently show that AWs are used in a small fraction of gun crimes. Even the highest

<sup>10</sup> The source in question contains a total of 48 estimates, but our focus is on those that examined all AWs (including pistols, rifles, and shotguns) as opposed to just assault rifles.

<sup>11</sup> For reasons discussed in Chapter 6, the national ATF estimate likely overestimates the use of AWs in crime. Nonetheless, the ATF estimate lies within the range of other presented estimates.

<sup>12</sup> The minimum estimate is based on AW cases as a percentage of all gun murders of police. The maximum estimate is based on AW cases as a percentage of cases for which at least the gun manufacturer was known. Note that AWs accounted for as many as 16% of gun murders of police in 1994 (Roth and Koper, 1997, Chapter 6; also see Adler et al., 1995).

<sup>13</sup> These statistics are based on a sample of 28 cases found through newspaper reports (Roth and Koper, 1997, Appendix A). One case involved an AW, accounting for 3.6% of all cases and 12.5% of cases in which at least the type of gun (including whether the gun was a handgun, rifle, or shotgun and whether the gun was a semiautomatic) was known. Also see the earlier discussion of AWs and mass shootings at the beginning of this chapter.

estimates, which correspond to particularly rare events such as mass murders and police murders, are no higher than 13%. Note also that the majority of AWs used in crime are assault pistols (APs) rather than assault rifles (ARs). Among AWs reported by police to ATF during 1992 and 1993, for example, APs outnumbered ARs by a ratio of 3 to 1 (see Chapter 6).

The relative rarity of AW use in crime can be attributed to a number of factors. Many AWs are long guns, which are used in crime much less often than handguns. Moreover, a number of the banned AWs are foreign weapons that were banned from importation into the U.S. in 1989. Also, AWs are more expensive (see Table 2-1) and more difficult to conceal than the types of handguns that are used most frequently in crime.

### *3.1.1. A Note on Survey Studies and Assault Weapons*

The studies and statistics discussed above were based primarily on police information. Some survey studies have given a different impression, suggesting substantial levels of AW ownership among criminals and otherwise high-risk juvenile and adult populations, particularly urban gang members (Knox et al., 1994; Sheley and Wright, 1993a). A general problem with these studies, however, is that respondents themselves had to define terms like “military-style” and “assault rifle.” Consequently, the figures from these studies may lack comparability with those from studies with police data. Further, the figures reported in some studies prompt concerns about exaggeration of AW ownership (perhaps linked to publicity over the AW issue during the early 1990s when a number of these studies were conducted), particularly among juvenile offenders, who have reported ownership levels as high as 35% just for ARs (Sheley and Wright, 1993a).<sup>14</sup>

Even so, most survey evidence on the actual use of AWs suggests that offenders rarely use AWs in crime. In a 1991 national survey of adult state prisoners, for example, 8% of the inmates reported possessing a “military-type” firearm at some point in the past (Beck et al., 1993, p. 19). Yet only 2% of offenders who used a firearm during their conviction offense reported using an AW for that offense (calculated from pp. 18, 33), a figure consistent with the police statistics cited above. Similarly, while 10% of adult inmates and 20% of juvenile inmates in a Virginia survey reported having owned an AR, none of the adult inmates and only 1% of the juvenile inmates reported having carried them at crime scenes (reported in Zawitz, 1995, p. 6). In contrast, 4% to 20% of inmates surveyed in eight jails across rural and urban areas of Illinois and Iowa reported having used an AR in committing crimes (Knox et al., 1994, p. 17). Nevertheless, even assuming the accuracy and honesty of the respondents’ reports, it is not clear what

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<sup>14</sup> As one example of possible exaggeration of AW ownership, a survey of incarcerated juveniles in New Mexico found that 6% reported having used a “military-style rifle” against others and 2.6% reported that someone else used such a rifle against them. However, less than 1% of guns recovered in a sample of juvenile firearms cases were “military” style guns (New Mexico Criminal Justice Statistical Analysis Center, 1998, pp. 17-19; also see Ruddell and Mays, 2003).



weapons they were counting as ARs, what percentage of their crimes were committed with ARs, or what share of all gun crimes in their respective jurisdictions were linked to their AR uses. Hence, while some surveys suggest that ownership and, to a lesser extent, use of AWs may be fairly common among certain subsets of offenders, the overwhelming weight of evidence from gun recovery and survey studies indicates that AWs are used in a small percentage of gun crimes overall.

### *3.1.2. Are Assault Weapons More Attractive to Criminal Users Than Other Gun Users?*

Although AWs are used in a small percentage of gun crimes, some have argued that AWs are more likely to be used in crime than other guns, i.e., that AWs are more attractive to criminal than lawful gun users due to the weapons' military-style features and their particularly large ammunition magazines. Such arguments are based on data implying that AWs are more common among crime guns than among the general stock of civilian firearms. According to some estimates generated prior to the federal ban, AWs accounted for less than one percent of firearms owned by civilians but up to 11% of guns used in crime, based on firearms reported by police to ATF between 1986 and 1993 (e.g., see Cox Newspapers, 1989; Lennett, 1995). However, these estimates were problematic in a number of respects. As discussed in Chapter 6, ATF statistics are not necessarily representative of the types of guns most commonly recovered by police, and ATF statistics from the late 1980s and early 1990s in particular tended to overstate the prevalence of AWs among crime guns. Further, estimating the percentage of civilian weapons that are AWs is difficult because gun production data are not reported by model, and one must also make assumptions about the rate of attrition among the stock of civilian firearms.

Our own more recent assessment indicates that AWs accounted for about 2.5% of guns produced from 1989 through 1993 (see Chapter 5). Relative to previous estimates, this may signify that AWs accounted for a growing share of civilian firearms in the years just before the ban, though the previous estimates likely did not correspond to the exact list of weapons banned in 1994 and thus may not be entirely comparable to our estimate. At any rate, the 2.5% figure is comparable to most of the AW crime gun estimates listed above; hence, it is not clear that AWs are used disproportionately in most crimes, though AWs still seem to account for a somewhat disproportionate share of guns used in murders and other serious crimes.

Perhaps the best evidence of a criminal preference for AWs comes from a study of young adult handgun buyers in California that found buyers with minor criminal histories (i.e., arrests or misdemeanor convictions that did not disqualify them from purchasing firearms) were more than twice as likely to purchase APs than were buyers with no criminal history (4.6% to 2%, respectively) (Wintemute et al., 1998a). Those with more serious criminal histories were even more likely to purchase APs: 6.6% of those who had been charged with a gun offense bought APs, as did 10% of those who had been charged with two or more serious violent offenses. AP purchasers were also more likely to be arrested subsequent to their purchases than were other gun purchasers.

Among gun buyers with prior charges for violence, for instance, AP buyers were more than twice as likely as other handgun buyers to be charged with any new offense and three times as likely to be charged with a new violent or gun offense. To our knowledge, there have been no comparable studies contrasting AR buyers with other rifle buyers.

### **3.2. Criminal Use of Large Capacity Magazines**

Relative to the AW issue, criminal use of LCMs has received relatively little attention. Yet the overall use of guns with LCMs, which is based on the combined use of AWs and non-banned guns with LCMs, is much greater than the use of AWs alone. Based on data examined for this and a few prior studies, guns with LCMs were used in roughly 14% to 26% of most gun crimes prior to the ban (see Chapter 8; Adler et al., 1995; Koper, 2001; New York Division of Criminal Justice Services, 1994).

- Baltimore (all guns recovered by police, 1993): 14%
- Milwaukee (guns recovered in murder investigations, 1991-1993): 21%
- Anchorage, Alaska (handguns used in serious crimes, 1992-1993): 26%
- New York City (guns recovered in murder investigations, 1993): 16-25%<sup>15</sup>
- Washington, DC (guns recovered from juveniles, 1991-1993): 16%<sup>16</sup>
- National (guns used in murders of police, 1994): 31%-41%<sup>17</sup>

Although based on a small number of studies, this range is generally consistent with national survey estimates indicating approximately 18% of all civilian-owned guns and 21% of civilian-owned handguns were equipped with LCMs as of 1994 (Cook and Ludwig, 1996, p. 17). The exception is that LCMs may have been used disproportionately in murders of police, though such incidents are very rare.

As with AWs and crime guns in general, most crime guns equipped with LCMs are handguns. Two handgun models manufactured with LCMs prior to the ban (the Glock 17 and Ruger P89) were among the 10 crime gun models most frequently recovered by law enforcement and reported to ATF during 1994 (ATF, 1995).

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<sup>15</sup> The minimum estimate is based on cases in which discharged firearms were recovered, while the maximum estimate is based on cases in which recovered firearms were positively linked to the case with ballistics evidence (New York Division of Criminal Justice Services, 1994).

<sup>16</sup> Note that Washington, DC prohibits semiautomatic firearms accepting magazines with more than 12 rounds (and handguns in general).

<sup>17</sup> The estimates are based on the sum of cases involving AWs or other guns sold with LCMs (Adler et al., 1995, p.4). The minimum estimate is based on AW-LCM cases as a percentage of all gun murders of police. The maximum estimate is based on AW-LCM cases as a percentage of cases in which the gun model was known.

### **3.3. Summary**

In sum, AWs and LCMs were used in up to a quarter of gun crimes prior to the 1994 AW-LCM ban. By most estimates, AWs were used in less than 6% of gun crimes even before the ban. Some may have perceived their use to be more widespread, however, due to the use of AWs in particularly rare and highly publicized crimes such as mass shootings (and, to a lesser extent, murders of police), survey reports suggesting high levels of AW ownership among some groups of offenders, and evidence that some AWs are more attractive to criminal than lawful gun buyers.

In contrast, guns equipped with LCMs – of which AWs are a subset – are used in roughly 14% to 26% of gun crimes. Accordingly, the LCM ban has greater potential for affecting gun crime. However, it is not clear how often the ability to fire more than 10 shots without reloading (the current magazine capacity limit) affects the outcomes of gun attacks (see Chapter 9). All of this suggests that the ban's impact on gun violence is likely to be small.



#### **4. OVERVIEW OF STUDY DESIGN, HYPOTHESES, AND PRIOR FINDINGS**

Section 110104 of the AW-LCM ban directed the Attorney General of the United States to study the ban's impact and report the results to Congress within 30 months of the ban's enactment, a provision which was presumably motivated by a sunset provision in the legislation (section 110105) that will lift the ban in September 2004 unless Congress renews the ban. In accordance with the study requirement, the National Institute of Justice (NIJ) awarded a grant to the Urban Institute to study the ban's short-term (i.e., 1994-1996) effects. The results of that study are available in a number of reports, briefs, and articles written by members of this research team (Koper and Roth, 2001a; 2001b; 2002a; Roth and Koper, 1997; 1999).<sup>18</sup> In order to understand the ban's longer-term effects, NIJ provided additional funding to extend the AW research. In 2002, we delivered an interim report to NIJ based on data extending through at least the late 1990s (Koper and Roth, 2002b). This report is based largely on the 2002 interim report, but with various new and updated analyses extending as far as 2003. It is thus a compilation of analyses conducted between 1998 and 2003. The study periods vary somewhat across the analyses, depending on data availability and the time at which the data were collected.

##### **4.1. Logical Framework for Research on the Ban**

An important rationale for the AW-LCM ban is that AWs and other guns equipped with LCMs are particularly dangerous weapons because they facilitate the rapid firing of high numbers of shots, thereby potentially increasing injuries and deaths from gun violence. Although AWs and LCMs were used in only a modest share of gun crimes before the ban, it is conceivable that a decrease in their use might reduce fatal and non-fatal gunshot victimizations, even if it does not reduce the overall rate of gun crime. (In Chapter 9, we consider in more detail whether forcing offenders to substitute other guns and smaller magazines can reduce gun deaths and injuries.)

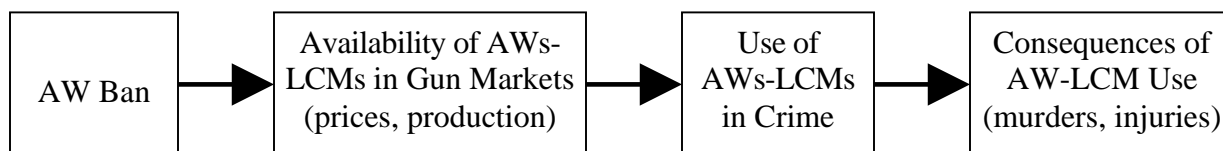
It is not clear how quickly such effects might occur, however, because the ban exempted the millions of AWs and LCMs that were manufactured prior to the ban's effective date in September 1994. This was particularly a concern for our first study, which was based on data extending through mid-1996, a period potentially too short to observe any meaningful effects. Consequently, investigation of the ban's effects on gun markets – and, most importantly, how they have affected criminal use of AWs and LCMs – has played a central role in this research. The general logic of our studies, illustrated in Figure 4-1, has been to first assess the law's impact on the availability of AWs and LCMs, examining price and production (or importation) indices in legal markets and relating them to trends in criminal use of AWs and LCMs. In turn, we can relate these market patterns to trends in the types of gun crimes most likely to be affected by changes in the use of AWs and LCMs. However, we cannot make definitive assessments of the

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<sup>18</sup> The report to Congress was the Roth and Koper (1997) report.

ban's impact on gun violence until it is clear that the ban has indeed reduced criminal use of AWs and LCMs.

**Figure 4-1. Logic Model for Research on the Assault Weapons Ban**



## 4.2. Hypothesized Market Effects

### 4.2.1. A General Description of Gun Markets

Firearms are distributed in markets commonly referred to as primary and secondary markets. Illicit gun transactions occur in both markets. Primary markets include wholesale and retail transactions by federally-licensed gun dealers, referred to as federal firearm licensees. Licensed dealers are required to, among things, follow federal and state background procedures to verify the eligibility of purchasers, observe any legally required waiting period prior to making transfers, and maintain records of gun acquisitions and dispositions (though records are not required for sales of ammunition magazines).

Despite these restrictions, survey data suggest that as many as 21% of adult gun offenders obtained guns from licensed dealers in the years prior to the ban (Harlow, 2001, p. 6; also see Wright and Rossi, 1986, pp. 183,185). In more recent years, this figure has declined to 14% (Harlow, 2001, p. 6), due likely to the Brady Act, which established a national background check system for purchases from licensed dealers, and reforms of the federal firearms licensing system that have greatly reduced the number of licensed gun dealers (see ATF, 2000; Koper, 2002). Some would-be gun offenders may be legally eligible buyers at the time of their acquisitions, while others may seek out corrupt dealers or use other fraudulent or criminal means to acquire guns from retail dealers (such as recruiting a legally entitled buyer to act as a “straw purchaser” who buys a gun on behalf of a prohibited buyer).

Secondary markets encompass second-hand gun transactions made by non-licensed individuals.<sup>19</sup> Secondary market participants are prohibited from knowingly transferring guns to ineligible purchasers (e.g., convicted felons and drug abusers). However, secondary transfers are not subject to the federal record-keeping and background check requirements placed on licensed dealers, thus making the secondary

<sup>19</sup> Persons who make only occasional sales of firearms are not required to obtain a federal firearms license (ATF, 2000, p. 11).

market almost entirely unregulated and, accordingly, a better source of guns for criminal users.<sup>20</sup> In the secondary market, ineligible buyers may obtain guns from a wide variety of legitimate or illegitimate gun owners: relatives, friends, fences, drug dealers, drug addicts, persons selling at gun shows, or other strangers (e.g., see Wright and Rossi, 1986; Sheley and Wright, 1993a). Of course, ineligible purchasers may also steal guns from licensed gun dealers and private gun owners.

Secondary market prices are generally lower than primary market prices (because the products are used), though the former may vary substantially across a range of gun models, places, circumstances, and actors. For example, street prices of AWs and other guns can be 3 to 6 times higher than legal retail prices in jurisdictions with strict gun controls and lower levels of gun ownership (Cook et al., 1995, p. 72). Nonetheless, experts note that primary and secondary market prices correspond to one another, in that relatively expensive guns in the primary market are also relatively expensive in the secondary market. Moreover, in any given locality, trends in secondary market prices can be expected to track those in the primary market because a rise in primary market prices for new weapons will increase demand for used weapons and therefore increase secondary market prices (Cook et al., 1995, p. 71).

#### 4.2.2. *The AW-LCM Ban and Gun Markets*

In the long term, we can expect prices of the banned guns and magazines to gradually rise as supplies dwindle. As prices rise, more would-be criminal users of AWs and LCMs will be unable or unwilling to pay the higher prices. Others will be discouraged by the increasing non-monetary costs (i.e., search time) of obtaining the weapons. In addition, rising legal market prices will undermine the incentive for some persons to sell AWs and LCMs to prohibited buyers for higher premiums, thereby bidding some of the weapons away from the channels through which they would otherwise reach criminal users. Finally, some would-be AW and LCM users may become less willing to risk confiscation of their AWs and LCMs as the value of the weapons increases. Therefore, we expect that over time diminishing stocks and rising prices will lead to a reduction in criminal use of AWs and LCMs.<sup>21</sup>

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<sup>20</sup> Some states require that secondary market participants notify authorities about their transactions. Even in these states, however, it is not clear how well these laws are enforced.

<sup>21</sup> We would expect these reductions to be apparent shortly after the price increases (an expectation that, as discussed below, was confirmed in our earlier study) because a sizeable share of guns used in crime are used within one to three years of purchase. Based on analyses of guns recovered by police in 17 cities, ATF (1997, p. 8) estimates that guns less than 3 years old (as measured by the date of first retail sale) comprise between 22% and 43% of guns seized from persons under age 18, between 30% and 54% of guns seized from persons ages 18 to 24, and between 25% and 46% of guns seized from persons over 24. In addition, guns that are one year old or less comprise the largest share of relatively new crime guns (i.e., crime guns less than three years old) (Pierce et al., 1998, p. 11). Similar data are not available for secondary market transactions, but such data would shorten the estimated time from acquisition to criminal use.

However, the expected timing of the market processes is uncertain. We can anticipate that AW and LCM prices will remain relatively stable for as long as the supply of grandfathered weapons is adequate to meet demand. If, in anticipation of the ban, gun manufacturers overestimated the demand for AWs and LCMs and produced too many of them, prices might even fall before eventually rising. Market responses can be complicated further by the continuing production of legal AW substitute models by some gun manufacturers. If potential AW buyers are content with an adequate supply of legal AW-type weapons having fewer military features, it will take longer for the grandfathered AW supply to constrict and for prices to rise. Similarly, predicting LCM price trends is complicated by the overhang of military surplus magazines that can fit civilian weapons (e.g., military M-16 rifle magazines that can be used with AR-15 type rifles) and by the market in reconditioned magazines. The “aftermarket” in gun accessories and magazine extenders that can be used to convert legal guns and magazines into banned ones introduces further complexity to the issue.

### **4.3. Prior Research on the Ban’s Effects**

To summarize the findings of our prior study, Congressional debate over the ban triggered pre-ban speculative price increases of upwards of 50% for AWs during 1994, as gun distributors, dealers, and collectors anticipated that the weapons would become valuable collectors’ items. Analysis of national and local data on guns recovered by police showed reductions in criminal use of AWs during 1995 and 1996, suggesting that rising prices made the weapons less accessible to criminal users in the short-term aftermath of the ban.

However, the speculative increase in AW prices also prompted a pre-ban boost in AW production; in 1994, AW manufacturers produced more than twice their average volume for the 1989-1993 period. The oversupply of grandfathered AWs, the availability of the AW-type legal substitute models mentioned earlier, and the steady supply of other non-banned semiautomatics appeared to have saturated the legal market, causing advertised prices of AWs to fall to nearly pre-speculation levels by late 1995 or early 1996. This combination of excess supply and reduced prices implied that criminal use of AWs might rise again for some period around 1996, as the large stock of AWs would begin flowing from dealers’ and speculators’ gun cases to the secondary markets where ineligible purchasers may obtain guns more easily.

We were not able to gather much specific data about market trends for LCMs. However, available data did reveal speculative, pre-ban price increases for LCMs that were comparable to those for AWs (prices for some LCMs continued to climb into 1996), leading us to speculate – incorrectly, as this study will show (see Chapter 8) – that there was some reduction in LCM use after the ban.<sup>22</sup>

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<sup>22</sup> To our knowledge, there have been two other studies of changes in AW and LCM use during the post-ban period. One study reported a drop in police recoveries of AWs in Baltimore during the first half of 1995 (Weil and Knox, 1995), while the other found no decline in recoveries of AWs or LCMs in Milwaukee homicide cases as of 1996 (Hargarten et al., 2000). Updated analyses for both of these cities

Determining whether the reduction in AW use (and perhaps LCM use) following the ban had an impact on gun violence was more difficult. The gun murder rate dropped more in 1995 (the first year following the ban) than would have been expected based on preexisting trends, but the short post-ban follow-up period available for the analysis precluded a definitive assessment as to whether the reduction was statistically meaningful (see especially Koper and Roth, 2001a). The reduction was also larger than would be expected from the AW-LCM ban, suggesting that other factors were at work in accelerating the decline. Using a number of national and local data sources, we also examined trends in measures of victims per gun murder incident and wounds per gunshot victim, based on the hypothesis that these measures might be more sensitive to variations in the use of AWs and LCMs. These analyses revealed no ban effects, thus failing to show confirming evidence of the mechanism through which the ban was hypothesized to affect the gun murder rate. However, newly available data presented in subsequent chapters suggest these assessments may have been premature, because any benefits from the decline in AW use were likely offset by steady or rising use of other guns equipped with LCMs, a trend that was not apparent at the time of our earlier study.

We cautioned that the short-term patterns observed in the first study might not provide a reliable guide to longer-term trends and that additional follow-up was warranted. Two key issues to be addressed were whether there had been a rebound in AW use since the 1995-1996 period and, if so, whether that rebound had yet given way to a long-term reduction in AW use. Another key issue was to seek more definitive evidence on short and long-term trends in the availability and criminal use of LCMs. These issues are critical to assessing the effectiveness of the AW-LCM ban, but they also have broader implications for other important policy concerns, namely, the establishment of reasonable timeframes for sunset and evaluation provisions in legislation. In other words, how long is long enough in evaluating policy and setting policy expiration dates?

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are presented in Chapters 6 and 8.

## 5. MARKET INDICATORS FOR ASSAULT WEAPONS: PRICES AND PRODUCTION

This chapter assesses the ban's impact on the availability of AWs in primary and secondary markets, as measured by trends in AW prices and post-ban production of legal AW substitute models. Understanding these trends is important because they influence the flow of grandfathered weapons to criminals and the availability of non-banned weapons that are close substitutes for banned ones. In the next chapter, we assess the impact of these trends on criminal use of AWs, as approximated by statistics on gun seizures by police. (Subsequent chapters present similar analyses for LCMs.)

Following our previous methods, we compare trends for AWs to trends for various non-banned firearms. The AW analyses generally focus on the most common AWs formerly produced in the U.S., including Intratec and SWD-type APs and AR-15-type ARs produced by Colt and others. In addition, we selected a small number of domestic pistol and rifle models made by Calico and Feather Industries that fail the features test provision of the AW legislation and that were relatively common among crime guns reported by law enforcement agencies to ATF prior to the ban (see Roth and Koper, 1997, Chapter 5). Together, this group of weapons represented over 80% of AWs used in crime and reported to ATF from 1993 through 1996, and the availability of these guns was not affected by legislation or regulations predating the AW-LCM ban.<sup>23</sup> We also examine substitution of legalized, post-ban versions of these weapons, including the Intratec AB-10 and Sport-22, FMJ's PM models (substitutes for the SWD group), Colt Sporters, Calico Liberty models, and others. We generally did not conduct comparative analyses of named foreign AWs (the Uzi, Galil, and AK weapons) because the 1989 federal import ban had already limited their availability, and their legal status was essentially unchanged by the 1994 ban.

The exact gun models and time periods covered vary across the analyses (based on data availability and the time at which data were collected). The details of each analysis are described in the following sections.

### 5.1. Price Trends for Assault Weapons and Other Firearms

To approximate trends in the prices at which AWs could be purchased throughout the 1990s, we collected annual price data for several APs, ARs, and non-banned comparison firearms from the *Blue Book of Gun Values* (Fjestad, 1990-1999). The *Blue Book* provides national average prices for an extensive list of new and used firearms based on information collected at gun shows and input provided by networks of dealers

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<sup>23</sup> The Intratec group includes weapons made by AA Arms. The SWD group contains related models made by Military Armaments Corporation/Ingram and RPB Industries. The AR-15 group contains models made by Colt and copies made by Bushmaster, Olympic Arms, Eagle Arms, SGW Enterprises, Essential Arms, DPMS, and Sendra.



and collectors. The *Blue Book* is utilized widely in the gun industry, though prices in any given locality may differ notably from the averages appearing in the *Blue Book*.

To assess time trends in gun prices, we conducted hedonic price analyses (Berndt, 1990) in which the gun prices were regressed upon a series of year and model indicators. The coefficients for the year indicators show annual changes in the prices of the guns relative to 1994 (the year the ban went into effect), controlling for time-stable differences in the prices of various gun models. Since manufacturers' suggested retail prices (MSRP) were not available for banned AWs during post-ban years, we utilized prices for AWs in 100% condition for all years.<sup>24</sup> For non-banned firearms, we used MSRP.<sup>25</sup> For all models, we divided the gun prices by annual values of the gross domestic product price deflator provided in the December 2001 and 2000 issues of *Economic Indicators* and logged these adjusted prices.

Each model presented below is based on data pooled across a number of firearm models and years, so that observation  $P_{jt}$  represents the price of gun model  $j$  during year  $t$ . We weighted each observation,  $P_{jt}$ , based on cumulative estimates of the production of model  $j$  from 1985 or 1986 (depending on data availability) through year  $t$  using data provided by gun manufacturers to ATF and published by the Violence Policy Center (1999).<sup>26, 27</sup>

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<sup>24</sup> Project staff also collected prices of weapons in 80% condition. However, the levels and annual changes of the 80% prices were very highly correlated (0.86 to 0.99) with those of the 100% condition prices. Therefore, we limited the analysis to the 100% prices.

<sup>25</sup> We utilized prices for the base model of each AW and comparison firearm (in contrast to model variations with special features or accessories).

<sup>26</sup> The regression models are based on equal numbers of observations for each gun model. Hence, unweighted regressions would give equal weight to each gun model. This does not seem appropriate, however, because some guns are produced in much larger numbers than are other guns. Weighting the regression models by production estimates should therefore give us a better sense of what one could "typically" expect to pay for a generic gun in each study category (e.g., a generic assault pistol).

<sup>27</sup> Several of the selected weapons began production in 1985 or later. In other cases, available production data extended back to only the mid-1980s. Published production figures for handguns are broken down by type (semiautomatic, revolver) and caliber and thus provide perfect or very good approximations of production for the handgun models examined in this study. Rifle production data, however, are not disaggregated by gun type, caliber, or model. For the ARs under study, the production counts should be reasonable approximations of AR production because most of the rifles made by the companies in question prior to the ban were ARs. The rifles used in the comparison (i.e., non-banned) rifle analysis are made by companies (Sturm Ruger, Remington, and Marlin) that produce numerous semiautomatic and non-semiautomatic rifle models. However, the overall rifle production counts for these companies should provide some indication of differences in the availability of the comparison rifles relative to one another. Because production data were available through only 1997 at the time this particular analysis was conducted (Violence Policy Center, 1999), we used cumulative production through 1997 to weight the 1998 and 1999 observations for the comparison handgun and comparison rifle models. This was not a consideration for AWs since their production ceased in 1994 (note that the AW production figures for 1994 may include some post-ban legal substitute models manufactured after September 13, 1994). Nonetheless, weighting had very little effect on the inferences from either of the comparison gun models.

### 5.1.1. Assault Pistol Prices

The analysis of AP prices focuses on the Intratec TEC-9/DC-9, TEC-22, SWD M-11/9, and Calico M950 models. Regression results are shown in Table 5-1, while Figure 5-1 graphically depicts the annual trend in prices for the period 1990 through 1999. None of the yearly coefficients in Table 5-1 is statistically significant, thus indicating that average annual AP prices did not change during the 1990s after adjusting for inflation. Although the model is based on a modest number of observations ( $n=40$ ) that may limit its statistical power (i.e., its ability to detect real effects), the size of the yearly coefficients confirm that prices changed very little from year to year. The largest yearly coefficient is for 1990, and it indicates that AP prices were only 4% higher in 1990 than in 1994.<sup>28</sup>

This stands in contrast to our earlier finding (Roth and Koper, 1997, Chapter 4) that prices for SWD APs may have risen by as much as 47% around the time of the ban. However, the earlier analyses were based on semi-annual or quarterly analyses advertised by gun distributors and were intended to capture short-term fluctuations in price that assumed greater importance in the context of the first AW study, which could examine only short-term ban outcomes. *Blue Book* editions released close in time to the ban (e.g., 1995) also cautioned that prices for some AWs were volatile at that time. This study emphasizes longer-term price trends, which appear to have been more stable.<sup>29</sup>

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<sup>28</sup> To interpret the coefficient of each indicator variable in terms of a percentage change in the dependent variable, we exponentiate the coefficient, subtract 1 from the exponentiated value, and multiply the difference by 100.

<sup>29</sup> Although the earlier analysis of AP prices focused on the greatest variations observed in semi-annual prices, the results also provide indications that longer-term trends were more stable. Prices in 1993, for example, averaged roughly 73% of the peak prices reached at the time the ban was implemented (i.e., late 1994), while prices in early 1994 and late 1995 averaged about 83% and 79% of the peak prices, respectively. Hence, price variation was much more modest after removing the peak periods around the time of the ban's implementation (i.e., late 1994 and early 1995). The wider range of APs used in the current study may also be responsible for some of the differences between the results of this analysis and the prior study.



**Table 5-1. Regression of Assault Pistol and Comparison Handgun Prices on Annual Time Indicators, 1990-1999, Controlling for Gun Model**

	Assault Pistols (n=40)		Comparison Handguns (n=38)	
	Estimate	T Value	Estimate	T Value
Constant	1.56	26.94***	-0.21	-6.81***
1990	0.04	1.07	0.12	2.07**
1991	0.01	0.30	0.09	1.79*
1992	-0.01	-0.32	0.05	1.30
1993	-0.03	-1.09	0.02	0.48
1995	0.01	0.22	-0.02	-0.48
1996	-0.01	-0.45	-0.09	-2.69***
1997	-0.03	-1.13	-0.11	-3.26***
1998	0.00	-0.10	-0.07	-1.99*
1999	-0.02	-0.58	-0.14	-4.02***
Tec-9	-0.67	-11.95***		
Tec-22	-0.89	-15.59***		
SWD	-0.64	-11.49***		
Davis P32			0.09	3.63***
Davis P380			0.20	8.20***
Lorcin L380			0.29	11.35***
F value	27.79		16.24	
(p value)	<.01		<.01	
Adj. R-square	0.89		0.83	

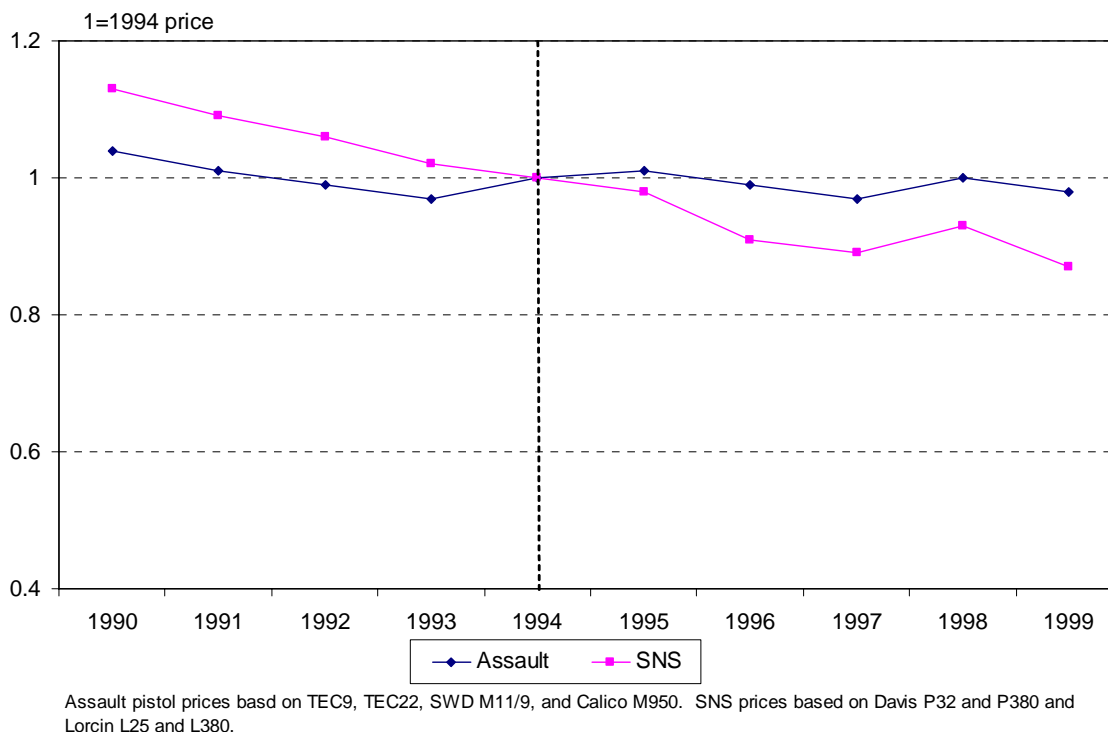
Time indicators are interpreted relative to 1994. Assault pistol model indicators are interpreted relative to Calico 9mm. Comparison handgun models are interpreted relative to Lorcin .25 caliber.

\* Statistically significant at  $p \leq .10$ .

\*\* Statistically significant at  $p \leq .05$ .

\*\*\* Statistically significant at  $p \leq .01$ .

**Figure 5-1. Annual Price Trends for Assault Pistols and SNS Handguns, 1990-1999**



### 5.1.2. Comparison Handgun Prices

For comparison, Table 5-1 and Figure 5-1 illustrate price trends for a number of non-banned, cheaply priced, and readily concealable semiautomatic handgun models: the Davis P32 and P380 and the Lorcin L25 and L380. Such guns are often referred to as Saturday night specials (SNS). By a number of accounts, SNS-type guns, and Davis and Lorcin models in particular, are among the guns most frequently used in crime (ATF, 1995; 1997; Kennedy et al., 1996; Wintemute, 1994). Although the differences between APs and SNS handguns (particularly the fact that most SNS handguns do not have LCMs) suggest they are likely to be used by gun consumers with different levels of firearms experience and sophistication, the SNS guns are arguably a good comparison group for APs because both groups of guns are particularly sensitive to criminal demand. Like AP buyers, SNS buyers are more likely than other gun buyers to have criminal histories and to be charged with new offenses, particularly violent or firearm offenses, subsequent to their purchases (Wintemute et al., 1998b).

Prices of SNS handguns dropped notably throughout the 1990s. Prices for SNS handguns were 13% higher in 1990 than in 1994. Prices then dropped another 13% from 1994 to 1999. This suggests that although AP prices remained generally stable throughout the 1990s, they increased relative to prices of other guns commonly used in crime. We say more about this below.

### 5.1.3. Assault Rifle Prices

To assess trends in prices of ARs, we examined prices for several Colt and Olympic rifle models in the AR-15 class, as well as Calico models M900 and M951 and Feather models AT9 and AT22.<sup>30</sup> Because rifle production data are not disaggregated by weapon type (semiautomatic, bolt action, etc.), caliber, or model, the regressions could only be weighted using overall rifle production counts for each company. For this reason, we calculated the average price of the ARs made by each company for each year and modeled the trends in these average prices over time, weighting by each company's total rifle production.<sup>31</sup>

Results shown in Table 5-2 and Figure 5-2 demonstrate that AR prices rose significantly during 1994 and 1995 before falling back to pre-ban levels in 1996 and remaining there through 1999. Prices rose 16% from 1993 to 1994 and then increased another 13% in 1995 (representing an increase of nearly one third over the 1993 level). Yet by 1996, prices had fallen to levels virtually identical to those before 1994. These patterns are consistent with those we found earlier for the 1992-1996 period (Roth and Koper, 1997, Chapter 4), though the annual price fluctuations shown here were not as dramatic as the quarterly changes shown in the earlier study.

Note, however, that these patterns were not uniform across all of the AR categories. The results of the model were driven largely by the patterns for Colt rifles, which are much more numerous than the other brands. Olympic rifles increased in price throughout the time period, while prices for most Calico and Feather rifles tended to fall throughout the 1990s without necessarily exhibiting spikes around the time of the ban.

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<sup>30</sup> Specifically, we tracked prices for the Match Target Lightweight (R6530), Target Government Model (R6551), Competition H-Bar (R6700), and Match Target H-Bar (R6601) models by Colt and the Ultramatch, Service Match, Multimatch M1-1, AR15, and CAR15 models by Olympic Arms. Each of these models has a modified, post-ban version. We utilized prices for the pre-ban configurations during post-ban years.

<sup>31</sup> Prices for the different models made by a given manufacturer tended to follow comparable trends, thus strengthening the argument for averaging prices.

**Table 5-2. Regression of Assault Rifle and Comparison Semiautomatic Rifle Prices on Annual Time Indicators, 1991-1999, Controlling for Gun Make**

	Assault Rifles (n=36)		Comparison Rifles (n=27)	
	Estimate	T value	Estimate	T value
Constant	1.31	21.15***	1.40	76.75***
1991	-0.12	-1.98*	-0.01	-0.21
1992	-0.13	-2.26**	0.01	0.30
1993	-0.15	-2.78**	0	-0.13
1995	0.12	2.47**	0.03	1.08
1996	-0.11	-2.27**	0.04	1.69
1997	-0.11	-2.23**	0.03	1.46
1998	-0.12	-2.47**	0.02	0.91
1999	-0.14	-2.71**	0.03	1.21
Colt (AR-15 type)	1.07	19.93***		
Olympic (AR-15 type)	1.14	16.08***		
Calico	0.43	5.53***		
Ruger			0.26	20.07***
Remington			0.29	21.69***
F statistic	50.52		63.62	
(p value)	<.01		<.01	
Adj. R-square	0.94		0.96	

Time indicators interpreted relative to 1994. Assault rifle makes interpreted relative to Feather.

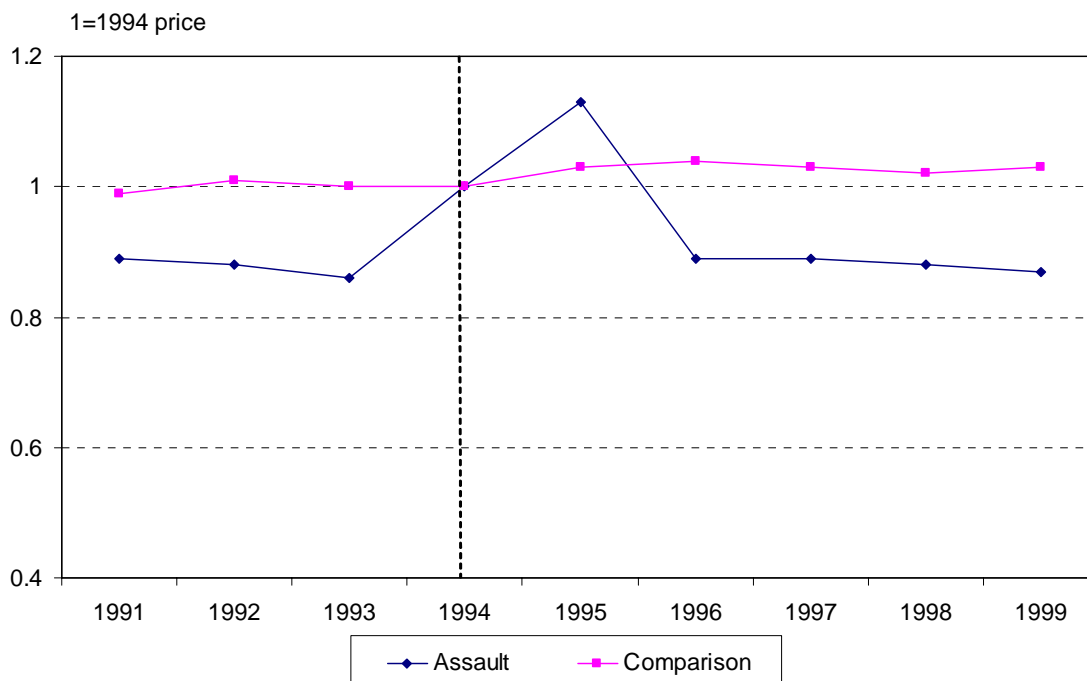
Comparison rifle makes interpreted relative to Marlin.

\* Statistically significant at  $p \leq .10$ .

\*\* Statistically significant at  $p \leq .05$ .

\*\*\* Statistically significant at  $p \leq .01$ .

**Figure 5-2. Annual Price Trends for Assault Rifles and Comparison Semiautomatic Rifles, 1991-1999**



Assault rifle prices based on Colt and Olympic AR-type, Calico, and Feather models. Comparison rifle prices based on selected Remington, Marlin, and Sturm Ruger models.

#### 5.1.4. Comparison Semiautomatic Rifles.

The analysis of comparison rifle prices includes the Remington 7400, Marlin Model 9, and Sturm Ruger Mini-14 and Mini-30 models (the Ruger model prices were averaged for each year). The AW legislation exempted each of these semiautomatic rifles by name, though the exemption does not apply to Mini-14 models with folding stocks (a feature included in the ban's features test). The Ruger models are of particular interest since they are among only four exempted guns that can accept LCMs made for military rifles (U.S. Department of the Treasury, 1998, p. 23), though Ruger produced LCMs only for the Mini-14 model and substituted a 5-round magazine for this gun in 1989 (Fjestad, 2002, pp. 1361-1362). The Marlin model was also manufactured with an LCM prior to 1990 (Fjestad, 2002, p. 917). The Remington model is manufactured with a detachable 4-round magazine.

Prices for these guns remained steady throughout the decade (see Table 5-2 and Figure 5-2). The largest change was a 4% increase (non-significant) in prices in 1996 relative to prices in 1994. Therefore, the rifle price spikes in 1994 and 1995 were specific to assault rifles. However, the steady annual price trends may mask short-term fluctuations that we found

previously (Roth and Koper, 1997, Chapter 4) for some non-banned semiautomatic rifles (including the Ruger Mini-14) during 1994 and early 1995.<sup>32</sup>

## 5.2. Production Trends for Assault Weapons and Other Firearms

To more fully assess the ban's effects on gun markets, examination of pre and post-ban trends in production of AWs and legal AW substitutes is a useful complement to studying price trends. Our earlier work revealed a spike in AW production during 1994 as the ban was being debated. Post-ban production of legal AW substitutes should reveal additional information about the reaction of gun markets to the ban. If production of these models has fallen off dramatically, it may suggest that the market for AWs has been temporarily saturated and/or that consumers of AWs favor the original AW models that have more military-style features. Stable or rising production levels, on the other hand, may indicate substantial consumer demand for AW substitutes, which would suggest that consumers consider the legal substitute models to be as desirable as the banned models.

### 5.2.1. *Production of Assault Pistols and Other Handguns*

Figure 5-3 presents production trends for a number of domestic AP manufacturers from 1985 through 2001 (the most recent year available for data on individual manufacturers).<sup>33</sup> After rising in the early 1990s and surging notably to a peak in 1994, production by these companies dropped off dramatically, falling 80% from 1993-1994 to 1996-1997 and falling another 35% by 1999-2000 (Table 5-3).<sup>34</sup> Makers of Intratec and SWD-type APs continued manufacturing modified versions of their APs for at least a few years following the ban, but at much lower volumes than that at which they produced APs just prior to the ban. Companies like AA Arms and Calico produced very few or no AP-type pistols from 1995 onward, and Intratec – producers of the APs most frequently used in crime – went out of business after 1999.

However, the pattern of rising and then falling production was not entirely unique to APs. Table 5-3 shows that production of all handguns and production of SNS-type pistols both declined sharply in the mid to late 1990s following a peak in 1993. Nonetheless, the trends –

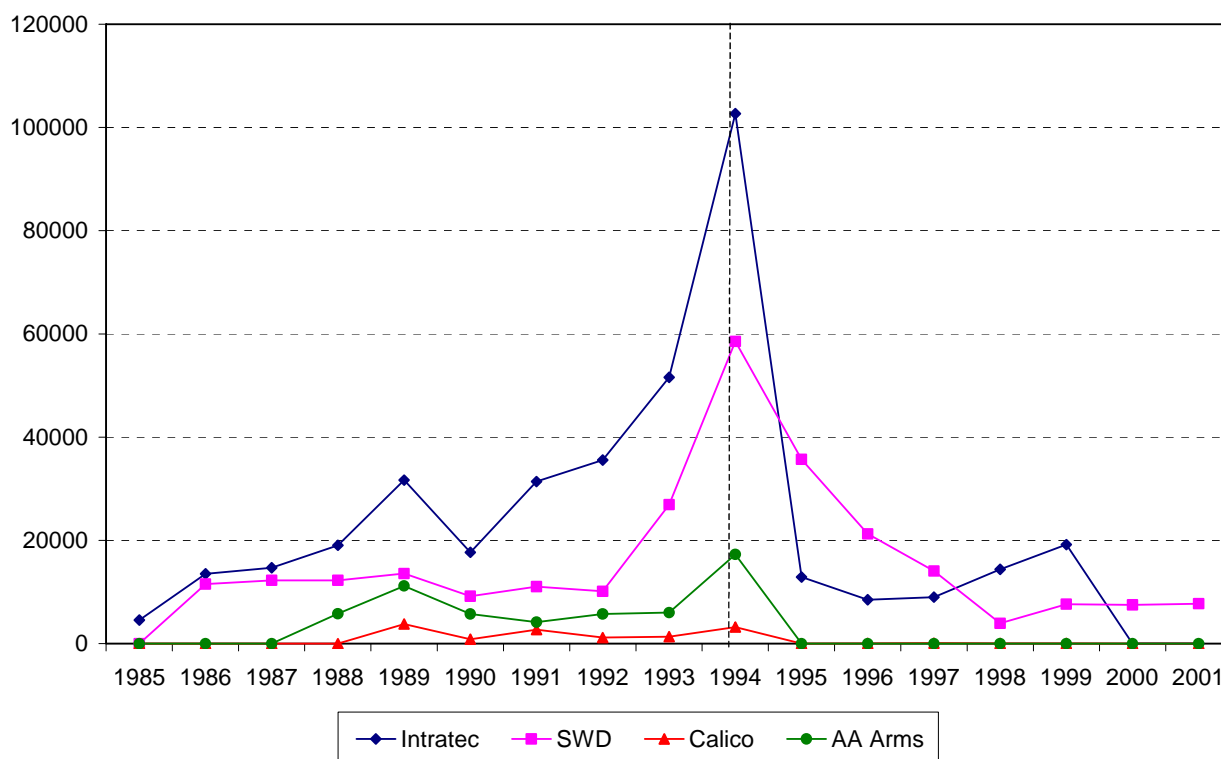
<sup>32</sup> We attributed those short-term fluctuations to pre-ban uncertainty regarding which semiautomatic rifles would be prohibited by the ban. Also note that the prior findings were based on a different set of comparison semiautomatic rifles that included a number of foreign rifles. We concentrated on domestically produced rifles for this updated analysis in order to make more explicit links between rifle price and production trends (data for the latter are available only for domestic firearms).

<sup>33</sup> Production figures for individual manufacturers through 2000 have been compiled by the Violence Policy Center (2002). Year 2001 data are available from ATF via the Internet (see [www.atf.treas.gov](http://www.atf.treas.gov)). National gun production totals through 1998 are also available from ATF (2000, p. A-3).

<sup>34</sup> The assault pistol production figures used here and in the price analysis include 9mm and .22 caliber pistols made by Intratec, 9mm pistols manufactured by AA Arms, all non-.22 caliber pistols manufactured by S.W. Daniels, Wayne Daniels, and Military Armaments Corporation (which together constitute the SWD group), and .22 and 9mm pistols manufactured by Calico. Intratec produces a few non-AW models in .22 and 9mm calibers, so the Intratec figures will overstate production of assault pistols and their legal substitutes to some degree. The comparison, SNS production figures are based on all handguns produced by Lorcin Engineering and Davis Industries.

both peak and decline – were more dramatic for APs than for other handguns. Production of APs rose 69% from 1990-1991 to 1993-1994, while SNS production and overall handgun production each increased 47%. From 1993-1994 to 1996-1997, production of AP-type handguns, SNS models, and all handguns declined 80%, 66%, and 47%, respectively. Further, production of AP-type handguns continued to decline at a faster rate than that of other handguns through the end of the decade.<sup>35</sup>

**Figure 5-3. Assault Pistol Production, 1985-2001**



<sup>35</sup> Lorcin, a prominent SNS brand that we examined for the price and production analyses, went out of business after 1998. Unlike the situation in the AP market (where, to our knowledge, former AP makers have not been replaced on any large scale), the SNS market appears to have compensated somewhat to offset the loss of Lorcin. The SNS change from 1996-1997 to 1999-2000 is based on examination of a larger group of SNS-type makers, including Lorcin, Davis, Bryco, Phoenix Arms, and Hi-Point. Production among this group declined by 22% from 1996-1997 to 1999-2000, a decline greater than that for total handgun production but less than that for AP-type production.

**Table 5-3. Production Trends for Assault Weapons and Other Firearms, 1990-2000\***

<b>Firearm Category</b>	<b>% Change 1990/91 to 1993/94</b>	<b>% Change 1993/94 to 1996/97</b>	<b>% Change 1996/97 to 1999/2000</b>
Total Handguns	47%	-47%	-10%
Assault Pistols (or Post-Ban Models)	69%	-80%	-35%
SNS Handguns	47%	-66%	-22%
Total Rifles	22%	8%	18%
Assault Rifles (or Post-Ban Models)	81%	-51%	156%
Comparison Rifles	15%	13%	-16%

\* Total handgun and rifle figures include all production by U.S. manufacturers. Assault pistols include Intratec group, SWD group, and Calico models. SNS figures are based on Lorcin Engineering and Davis Industries for changes up through 1996-1997. Because Lorcin went out of business after 1998, the SNS change from 1996-1997 to 1999-2000 is based on a larger group of SNS makers including Lorcin, Davis, Bryco, Phoenix Arms, and Hi-Point. Assault rifles include AR-15 type models by Colt and others. Comparison rifles include Sturm Ruger, Remington, and Marlin.

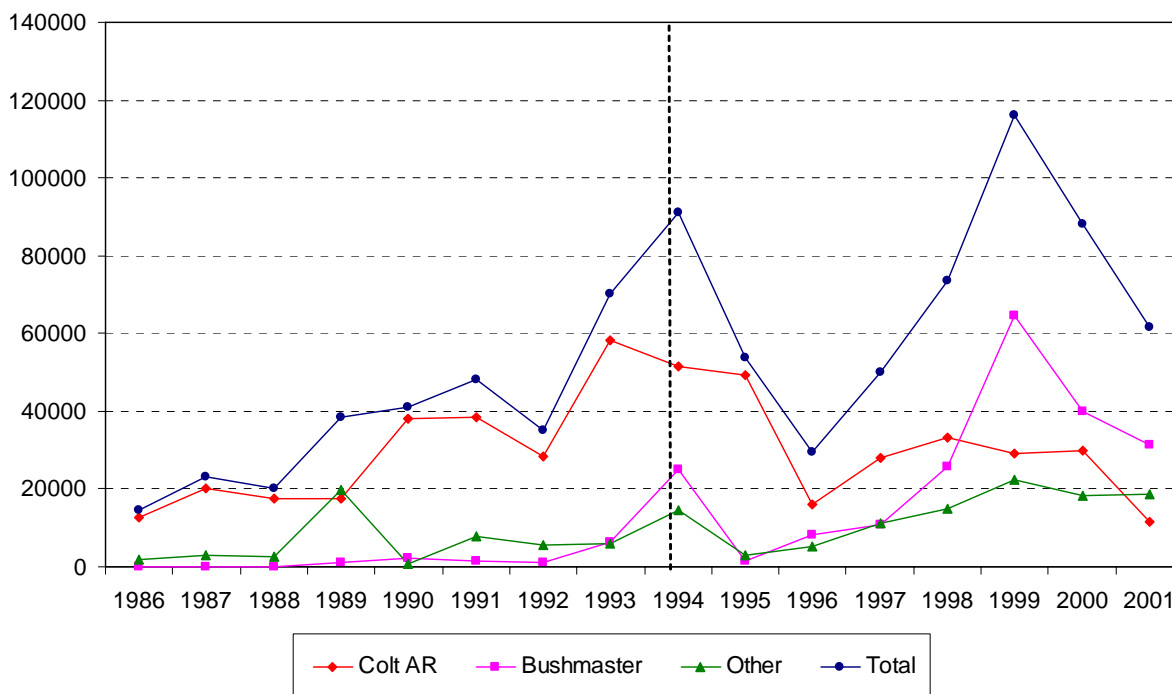
### *5.2.2. Production of Assault Rifles and Other Rifles*

As shown in Figure 5-4, production of AR-15 type rifles surged during the early 1990s, reaching a peak in 1994.<sup>36</sup> AR production during the early 1990s rose almost 4 times faster than total rifle production and over 5 times faster than production of the comparison rifles examined in the price analysis (Table 5-3). Yet, by 1996 and 1997, production of legalized AR-type rifles had fallen by 51%, as production of other rifles continued increasing. AR production trends reversed again during the late 1990s, however, rising over 150%.<sup>37</sup> Total rifle production increased much more modestly during this time (18%), while production of the comparison rifles declined.

<sup>36</sup> Note again that the AR and legalized AR production figures are approximations based on all rifles produced by the companies in question (rifle production data are not available by type, caliber, or model), but it appears that most rifles made by these companies during the study period were AR-type rifles. Also, the figures for the comparison rifle companies (Ruger, Marlin, and Remington) are based on all rifles produced by these companies (the price analysis focused on selected semiautomatic models).

<sup>37</sup> There was also a notable shift in market shares among AR makers, as Bushmaster overtook Colt as the leading producer of AR-15 type rifles (Figure 5-4).



**Figure 5-4. Assault Rifle Production, 1986-2001 (AR-15 Type)**

Other: Olympic, Eagle/Armalite, DPMS, Essential Arms, Sendra.

### 5.3. Summary and Interpretations

Below, we offer some interpretations of the patterns found in the price and production analyses, keeping in mind that these analyses were largely descriptive, so causal inferences must be made cautiously. As documented in our earlier study, Congressional debate over the AW-LCM ban triggered speculative price increases for AWs in the months leading up to the ban's enactment. This study's examination of longer-term, annual price trends suggests that this speculative effect was very brief (and perhaps quite variable across jurisdictions) for APs but persisted through 1995 for ARs. This implies that speculators and sophisticated gun collectors (who we suspect played a large role in driving price trends) have more interest in ARs, which tend to be higher in quality and price than APs.

Responding to the speculative price growth, AW manufacturers boosted their production of AWs in 1994. Although total handgun and rifle production were increasing during the early 1990s, the rise in AW production was steeper, and there was a production peak unique to AWs in 1994 (production of other handguns peaked in 1993). It seems that this boost in the supply of grandfathered AWs was sufficient to satisfy speculative demand, thereby restoring national average AP prices to pre-ban levels within a year of the ban and doing the same for AR prices by 1996. AW prices remained stable through the late 1990s, and production of legalized AW-type weapons dropped off

substantially, at least through 1998. This suggests that the supply of grandfathered AWs was sufficient to meet demand through the late 1990s.

However, prices of APs rose relative to other handguns commonly used in crime during the 1990s. Handgun prices and production declined in general during the late 1990s, implying a decrease in demand for APs and other handguns that probably stemmed from the nation's declining crime rates.<sup>38</sup> But the AW ban's restriction of the AP supply, combined with the interest of speculators and collectors in these guns, may have prevented AP prices from falling as did prices for other handguns. The market patterns also suggest that consumers of APs are not as easily satisfied by legalized APs with fewer military-style features; despite the increasing value of APs (in relative terms), post-ban production of legalized APs declined faster than did production of other handguns, and some AP makers went out of business.

Prices of ARs, on the other hand, remained steady during the late 1990s (after the speculative price bubble of 1994-1995) both in absolute terms and relative to other rifles. The failure of AR prices to rise in at least relative terms, as occurred for APs, and the temporary drop in production of AR-type rifles after the ban may signify that the AR market was saturated relative to the AP market for at least a number of years following the ban. However, demand for AR-type rifles later rebounded, as evidenced by the resurgence in production of legalized, AR-type rifles in the late 1990s. In fact, more of these guns were produced in 1999 than in 1994. Unlike AP users, therefore, rifle users appear to be readily substituting the legalized AR-type rifles for the banned ARs, which may be another factor that has kept prices of the latter rifles from rising. All of this suggests that rifle owners, who have a lower prevalence of criminal users than do handgun owners, can more easily substitute rifles with fewer or no military features for the hunting and other sporting purposes that predominate among rifle consumers.

Another relevant factor may have been a surge in the supply of foreign semiautomatic rifles that can accept LCMs for military weapons (the LCMM rifles discussed in Chapter 2) during the early 1990s. Examples of LCMM rifles include legalized versions of banned AK-47, FN-FAL, and Uzi rifles. Importation of LCMM rifles rose from 19,147 in 1991 to 191,341 in 1993, a nine-fold increase (Department of the Treasury, 1998, p. 34). Due to an embargo on the importation of firearms from China (where many legalized AK-type rifles are produced), imports of LCMM rifles dropped

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<sup>38</sup> It seems likely that the rise and fall of handgun production was linked to the rising crime rates of the late 1980s and early 1990s and the falling crime rates of the mid and late 1990s. Self-defense and fear of crime are important motivations for handgun ownership among the general population (e.g., Cook and Ludwig, 1996; McDowall and Loftin, 1983), and the concealability and price of handguns make them the firearms of choice for criminal offenders. It is likely that the peak in 1993 was also linked to the Congressional debate and passage of the Brady Act, which established a background check system for gun purchases from retail dealers. It is widely recognized in the gun industry that the consideration of new gun control legislation tends to increase gun sales.

The decline in production was more pronounced for SNS handguns, whose sales are likely to be particularly sensitive to crime trends. Criminal offenders make disproportionate use of these guns. We can also speculate that they are prominent among guns purchased by low-income citizens desiring guns for protection. In contrast, the poor quality and reliability of these guns make them less popular among more knowledgeable and affluent gun buyers.

back down to 21,261 in 1994. Importation of all foreign LCMM rifles was ended by federal executive order in 1998.

ATF has reported that criminal use of LCMM rifles increased more quickly during the early 1990s than did that of other military-style rifles (U.S. Department of the Treasury, 1998, p. 33; also see Chapter 6). Accordingly, it is possible that the availability of LCMM rifles also helped to depress the prices of domestic ARs and discourage the production of legalized ARs during the 1990s, particularly if criminal users of rifles place a premium on the ability to accept LCMs. It is noteworthy, moreover, that the rebound in domestic production of legalized ARs came on the heels of the 1998 ban on LCMM rifles, perhaps suggesting the LCMM ban increased demand for domestic rifles accepting LCMs.

In sum, this examination of the AW ban's impact on gun prices and production suggests that there has likely been a sustained reduction in criminal use of APs since the ban but not necessarily ARs. Since most AWs used in crime are APs, this should result in an overall decline in AW use. In the following chapter, we examine the accuracy of this prediction.

## **6. CRIMINAL USE OF ASSAULT WEAPONS AFTER THE BAN**

### **6.1. Measuring Criminal Use of Assault Weapons: A Methodological Note**

In this chapter, we examine trends in the use of AWs using a number of national and local data sources on guns recovered by law enforcement agencies (we focus on the domestic AW models discussed at the beginning of the previous chapter). Such data provide the best available indicator of changes over time in the types (and especially the specific makes and models) of guns used in violent crime and possessed and/or carried by criminal and otherwise deviant or high-risk persons. The majority of firearms recovered by police are tied to weapon possession and carrying offenses, while the remainder are linked primarily to violent crimes and narcotics offenses (e.g., see ATF, 1976; 1977; 1997; Brill, 1977). In general, up to a quarter of guns confiscated by police are associated with violent offenses or shots fired incidents (calculated from ATF, 1977, pp. 96-98; 1997; Brill, 1977, pp. 24,71; Shaw, 1994, pp. 63, 65; also see data presented later in this chapter). Other confiscated guns may be found by officers, turned in voluntarily by citizens, or seized by officers for temporary safekeeping in situations that have the potential for violence (e.g., domestic disputes).

Because not all recovered guns are linked to violent crime investigations, we present analyses based on all gun recoveries and gun recoveries linked to violent crimes where appropriate (some of the data sources are based exclusively, or nearly so, on guns linked to violent crimes). However, the fact that a seized gun is not clearly linked to a violent crime does not rule out the possibility that it had been or would have been used in a violent crime. Many offenders carry firearms on a regular basis for protection and to be prepared for criminal opportunities (Sheley and Wright, 1993a; Wright and Rossi, 1986). In addition, many confiscated guns are taken from persons involved in drugs, a group involved disproportionately in violence and illegal gun trafficking (National Institute of Justice, 1995; Sheley and Wright, 1993a). In some instances, criminal users, including those fleeing crime scenes, may have even possessed discarded guns found by patrol officers. For all these reasons, guns recovered by police should serve as a good approximation of the types of guns used in violent crime, even though many are not clearly linked to such crimes.

Two additional caveats should be noted with respect to tracking the use of AWs. First, we can only identify AWs based on banned makes and models. The databases do not contain information about the specific features of firearms, thus precluding any assessment of non-banned gun models that were altered after purchase in ways making them illegal. In this respect, our numbers may understate the use of AWs, but we know of no data source with which to evaluate the commonality of such alterations. Second, one cannot always distinguish pre-ban versions of AWs from post-ban, legalized versions of the same weapons based on weapon make and model information (this occurs when the post-ban version of an AW has the same name as the pre-ban version), a factor which may have caused us to overstate the use of AWs after the ban. This was more of a problem for our assessment of ARs, as will be discussed below.

Finally, we generally emphasize trends in the percentage of crime guns that are AWs in order to control for overall trends in gun violence and gun recoveries. Because gun violence was declining throughout the 1990s, we expected the number of AW recoveries to drop independently of the ban's impact.

## **6.2. National Analysis of Guns Reported By Police to the Federal Bureau of Alcohol, Tobacco, and Firearms**

### *6.2.1. An Introduction to Gun Tracing Data*

In this section, we examine national trends in AW use based on firearm trace requests submitted to ATF by federal, state, and local law enforcement personnel throughout the nation. A gun trace is an investigation that typically tracks a gun from its manufacture to its first point of sale by a licensed dealer. Upon request, ATF traces guns seized by law enforcement as a service to federal, state, and local agencies. In order to initiate a trace on a firearm, the requesting law enforcement agency provides information about the firearm, such as make, model, and serial number.

Although ATF tracing data provide the only available national sample of the types of guns used in crime and otherwise possessed or carried by criminal and high-risk groups, they do have limitations for research purposes. Gun tracing is voluntary, and police in most jurisdictions do not submit trace requests for all, or in some cases any, guns they seize. Crime and tracing data for 1994, for example, suggest that law enforcement agencies requested traces for 27% of gun homicides but only 1% of gun robberies and gun assaults known to police during that year (calculated from ATF, 1995 and Federal Bureau of Investigation, 1995, pp. 13, 18, 26, 29, 31, 32).

The processes by which state and local law enforcement agencies decide to submit guns for tracing are largely unknown, and there are undoubtedly important sources of variation between agencies in different states and localities. For example, agencies may be less likely to submit trace requests in states that maintain their own registers of gun dealers' sales. Knowledge of ATF's tracing capabilities and procedures,<sup>39</sup> as well as participation in federal/state/local law enforcement task forces, are some of the other factors that may affect an agency's tracing practices. Further, these factors are likely to vary over time, a point that is reinforced below.

Therefore, firearms submitted to ATF for tracing may not be representative of the

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<sup>39</sup> To illustrate, ATF cannot (or does not) trace military surplus weapons, imported guns without the importer name (generally, pre-1968 guns), stolen guns, or guns without a legible serial number (Zawitz 1995). Tracing guns manufactured before 1968 is also difficult because licensed dealers were not required to keep records of their transactions prior to that time. Throughout much of the 1990s, ATF did not generally trace guns older than 5-10 years without special investigative reasons (Kennedy et al., 1996, p. 171). Our data are based on trace requests rather than successful traces, but knowledge of the preceding operational guidelines might have influenced which guns law enforcement agencies chose to trace in some instances.

types of firearms typically seized by police. In general, not much is known about the nature of potential bias in tracing data. In prior studies, however, AWs tended to be more common in tracing data than in more representative samples of guns confiscated by police (Kleck, 1997, pp. 112, 141). This suggests that police have been more likely historically to initiate traces for seized AWs than for other seized guns. Although comparisons across studies are complicated by varying definitions of AWs used in different analyses, studies of guns confiscated by police or used in particular types of crimes generally suggest that AWs accounted for up to 6% of crime guns and about 2% on average prior to the federal AW ban (see Chapter 3 and Kleck, 1997, p. 141), whereas studies of pre-ban tracing data indicated that 8% of traced guns, and sometimes as many as 11%, were AWs (Cox Newspapers, 1989; Lenett, 1995; Zawitz, 1995).

Changes over time in the tracing practices of law enforcement agencies present additional complexities in analyzing tracing data. Due to improvements in the tracing process, ATF promotional efforts, and special initiatives like the Youth Crime Gun Interdiction Initiative (see ATF, 1997; 1999 and more recent reports available via the Internet at [www.atf.treas.gov](http://www.atf.treas.gov)),<sup>40</sup> the utilization of tracing grew substantially throughout the 1990s in jurisdictions that chose to participate (also see ATF, 2000; Roth and Koper, 1997). To illustrate, trace requests to ATF rose from roughly 42,300 in 1991 to 229,500 in 2002 (see Table 6-1 in the next section), an increase of 443%. This growth reflects changes in tracing practices (i.e., changes in the number of agencies submitting trace requests and/or changes in the percentage of recovered guns for which participating agencies requested traces) rather than changes in gun crime; gun homicides, for example, were falling throughout the 1990s (see Table 6-1 in the next section) and were a third lower in 2002 than in 1991.

Therefore, an increase in trace requests for AWs does not necessarily signal a real increase in the use of AWs. Further, examining trends in the percentage of trace requests associated with AWs is also problematic. Because law enforcement agencies were more likely to request traces for AWs than for other guns in years past, we can expect the growth rate in tracing for non-AWs to exceed the growth rate in traces for AWs as gun tracing becomes more comprehensive. Consequently, AWs are likely to decline over time as a share of trace requests due simply to reporting effects, except perhaps during periods when AWs figure prominently in public discourse on crime.<sup>41</sup>

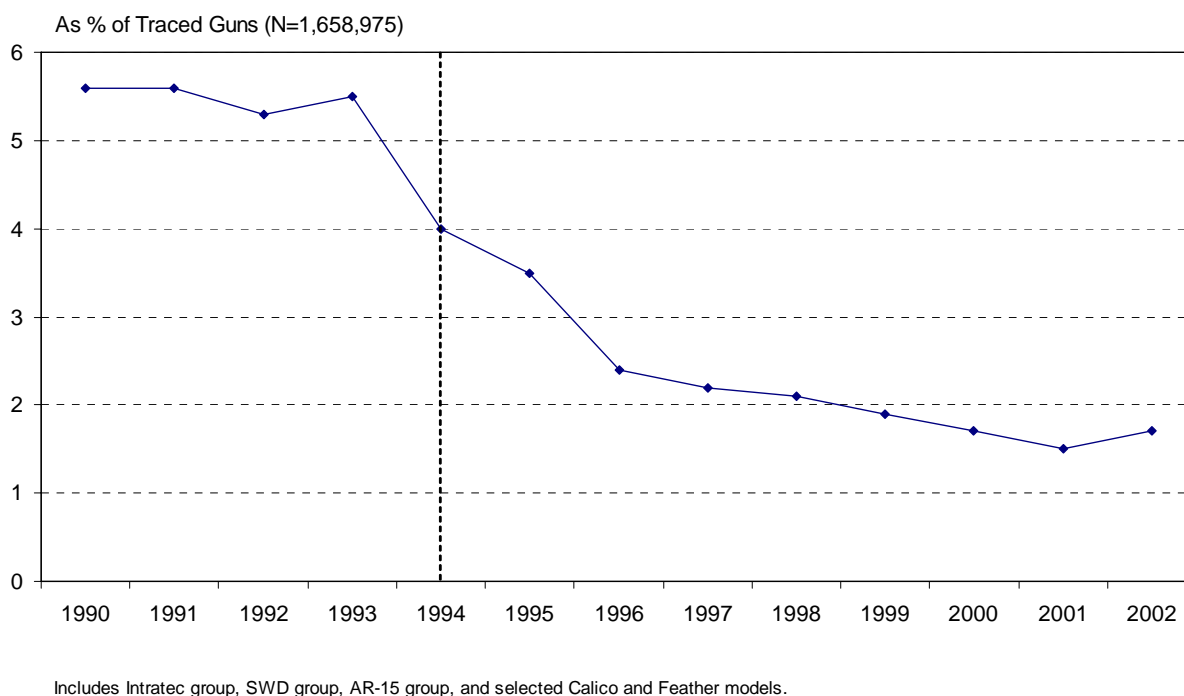
<sup>40</sup> As part of this initiative, police in a few dozen large cities are submitting trace requests to ATF for all guns that they confiscate. The initiative began with 17 cities in 1996 and has since spread to 55 major urban jurisdictions.

<sup>41</sup> To illustrate, assume that a hypothetical police agency recovers 100 guns a year, 2 of which are AWs, and that the agency has a selective tracing policy that results in the submission of trace requests for 20 of the guns, including 1 of the recovered AWs. Under this scenario, the department would be almost three times as likely to request traces for AWs as for other guns. If the department adopted a policy to request traces on all guns (and again recovered 2 AWs and 98 other guns), AW traces would double and traces of other guns would increase by more than 400%. Moreover, AWs would decline from 5% of traced guns to 2% of traced guns due simply to the change in tracing policy.

### 6.2.2. *Traces of Assault Weapons, 1990-2002*

Figure 6-1 illustrates the share of all traces that were for AWs from 1990 through 2002. A more detailed assessment of annual changes in traces for AWs and other guns is presented in Table 6-1. Changes in gun murders are also shown in Table 6-1 to emphasize the differences in trends for tracing and gun crime. Below, we summarize key points from the analysis. Due to the instrumentation problems inherent in tracing data, statistical tests are not presented.<sup>42</sup>

**Figure 6-1. Police Recoveries of Assault Weapons Reported to ATF (National), 1990-2002**



<sup>42</sup> Nearly 30% of the tracing records lack specific gun model designations (the crucial elements for conducting a trace are the gun make and serial number). For the makes and types of guns likely to be AWs, however, the missing model rate was slightly under 10%. Further, we were able to identify some of the latter weapons as AWs with reasonable confidence based on the makes, types, and calibers alone. Nevertheless, we conducted a supplemental analysis using only those records for which the gun model was identified. The results of that analysis were substantively very similar to those presented below.



**Table 6-1. Annual Percentage Changes in Gun Murders and Police Requests to ATF for Traces of Assault Weapons and Other Firearms, 1991-2002 (Number of Traces in Parentheses)**

<u>Year</u>	<u>Gun Murders</u> (1)	<u>All Traces</u> (2)	<u>AW Traces*</u> (3)	<u>AP Traces</u> (4)	<u>AR Traces</u> (5)	<u>AW and AW Substitute Traces</u> (6)	<u>Violent Crime Traces</u> (7)	<u>AW Violent Crime Traces</u> (8)	<u>LCMM Rifle Traces**</u> (9)
1991	9%	14% (42281)	14% (2378)	24% (1775)	-6% (603)	14% (2378)	19% (6394)	20% (344)	--
1992	-1%	6% (44992)	1% (2398)	4% (1838)	-7% (560)	1% (2398)	3% (6558)	7% (367)	--
1993	5%	20% (54189)	25% (2994)	20% (2199)	42% (795)	25% (2994)	26% (8248)	41% (516)	252% (183)
1994	-4%	53% (82791)	11% (3337)	23% (2706)	-21% (631)	11% (3337)	22% (10083)	-18% (424)	223% (592)
1995	-10%	-6% (77503)	-19% (2730)	-24% (2051)	8% (679)	-18% (2747)	23% (12439)	-15% (362)	-10% (530)
1996	-9%	66% (128653)	12% (3059)	13% (2309)	10% (750)	17% (3214)	67% (20816)	27% (459)	40% (743)
1997	-7%	42% (183225)	31% (4019)	31% (3017)	34% (1002)	36% (4362)	11% (23147)	13% (519)	24% (925)
1998	-11%	5% (192115)	0% (4014)	-9% (2751)	26% (1263)	7% (4681)	3% (23844)	-22% (404)	33% (1227)
1999	-8%	-2% (188296)	-11% (3581)	-12% (2414)	-8% (1167)	-6% (4406)	3% (24663)	0% (404)	-18% (1003)
2000	1%	-3% (182961)	-11% (3196)	-16% (2027)	0% (1169)	-6% (4143)	-13% (21465)	-25% (305)	-14% (859)
2001	-1%	18% (215282)	1% (3238)	5% (2138)	-6% (1100)	3% (4273)	20% (25822)	6% (322)	-3% (833)
2002	6%	7% (229525)	19% (3839)	4% (2214)	48% (1625)	12% (4765)	20% (30985)	65% (531)	4% (865)

\* Based on Intratec group, SWD group, AR-15 group, and Calico and Feather models.

\*\* Foreign semiautomatic rifles accepting large capacity military magazines (banned by executive order in 1998). (Data are not shown for 1991 and 1992 because very few of these guns were traced in those years.)



#### *6.2.2.1. Assault Weapons as a Percentage of Crime Gun Traces*

As shown in Figure 6-1, AWs declined from 5.4% of crime gun traces in 1992-1993 to 1.6% in 2001-2002, a decline of 70%. Although this downward trend could be attributable in large part to changes in tracing practices, it is noteworthy that it did not begin until 1994 (the year of the ban); during the pre-ban years, 1990 to 1993, AWs accounted for a steady share of traces despite a 46% increase in total tracing volume. It is also remarkable that about 3,200 AWs were traced in both 2000 and 2001, which is virtually identical to the average number traced during 1993 and 1994 (3,166) even though total traces increased more than 190% during the same period (Table 6-1, columns 2 and 3).<sup>43</sup>

#### *6.2.2.2. Annual Changes in Traces for Assault Weapons and Other Guns*

Throughout most of the post-ban period (particularly 1995 to 2001), AW traces either increased less or declined more than total traces (Table 6-1, columns 2 and 3), a pattern that is also consistent with a decline in the use of AWs relative to other guns, though it too may be distorted by changes in tracing practices. This pattern was largely consistent whether analyzing all traces or only traces associated with violent crimes (columns 7 and 8).<sup>44</sup>

The years when total traces declined or were relatively flat are arguably the most informative in the series because they appear to have been less affected by changes in tracing practices. For example, there was a 6% decline in total trace requests from 1994 to 1995 (the years featured in our earlier study) that coincided with a 10% drop in gun murders (Table 6-1, column 1). Therefore, it seems tracing practices were relatively stable (or, conversely, reporting effects were relatively small) from 1994 to 1995. The 19% reduction in AW traces during this same period implies that AW use was declining faster than that of other guns. Furthermore, there were fewer AW traces in 1995 than in 1993, the year prior to the ban. The fact that this occurred during a period when the AW issue was very prominent (and hence police might have been expected to trace more of the AWs they recovered) arguably strengthens the causal inference of a ban effect.<sup>45</sup>

Total traces also declined slightly (2%-3%) in 1999 and 2000. In each of those years, the decline was greater for AWs (11%). Thus, in years when tracing declined overall, AW traces fell 3 to 6 times faster than did total traces. Put another way, AWs fell between 9% and 13% as a percentage of all traces in each of these years.

The general pattern of AW traces increasing less or declining more than those of

<sup>43</sup> These general findings are consistent with those of other tracing analyses conducted by ATF (2003 Congressional Q&A memo provided to the author) and the Brady Center to Prevent Gun Violence (2004).

<sup>44</sup> A caveat is that requests without specific crime type information are often grouped with weapons offenses (ATF, 1999). Therefore, traces associated with violent crimes are likely understated to some degree.

<sup>45</sup> This inference is also supported by our earlier finding that trace requests for AWs declined by only 8% in states that had their own AW bans prior to the federal ban (Roth and Koper, 1997, Chapter 5).

other crime guns was clearly apparent for APs but less consistent for ARs (Table 6-1, columns 4 and 5). For example, AR traces went up 26% in 1998 while total traces went up only 5% and AP traces declined 9%. In 2000, total and AP traces fell 3% and 16%, respectively, but AR traces remained flat. This is consistent with predictions derived from the price and production analyses described above. But note that the post-ban AR counts could be overstated because the data do not distinguish pre-ban from post-ban versions of some popular AR-15 type rifles like the Colt Sporter and Bushmaster XM-15. (Also note that the percentage of traces for ARs did fall from 1.4% in 1992-1993 to 0.6% in 2001-2002.)

More generally, the use of post-ban AW-type weapons (including both legalized APs and ARs) has not been widespread enough to completely offset the apparent decline in the use of banned AWs. Combined traces for banned AWs and AW substitutes (Table 6-1, column 6) also followed the pattern of increasing less or declining more than did total traces throughout most of the period, though the differences were not as pronounced as those between AWs and total traces. In 1999 and 2000, for example, AWs traces dropped 11%, while combined traces for AWs and legal substitutes declined only 6%. Still, the latter figure was greater than the 2%-3% drop for total traces.

Finally, traces of the LCMM rifles banned by executive order in 1998 were generally rising to that point, reaching levels as high as those for AR-15 type rifles (Table 6-1, column 9). Since 1998, however, the number of traces for LCMM rifles has fallen substantially. Despite a 4% increase from 2001 to 2002, the number of LCMM traces in 2002 (865) was 30% lower than the peak number traced in 1998 (1,227). Tentatively, this suggests that the 1998 extension of the ban has been effective in curtailing weapons that offenders may have been substituting for the ARs banned in 1994.

#### *6.2.2.3. Did Use of Assault Weapons Rebound in 2002?*

In 2002, tracing volume increased 7%, which closely matched the 6% increase in gun murders for that year. In contrast to the general pattern, AW traces increased by 19%, suggesting a possible rebound in AW use independent of changes in tracing practices, a development that we have predicted elsewhere (Roth and Koper, 1997) based on the boom in AW production leading up to the ban. The disproportionate growth in AW traces was due to ARs, however, so it could partially reflect increasing use of post-ban AR-type rifles (see the discussion above).

Moreover, this pattern could be illusory. With data from the most recent years, it was possible to run a supplementary analysis screening out traces of older weapons (not shown). Focusing on just those guns recovered and traced in the same year for 2000 through 2002 revealed that recoveries of AWs declined in 2001, more so for ARs (16%) than for APs (9%), while total traces increased 1%.<sup>46</sup> Traces for APs and ARs then

<sup>46</sup> The tracing database indicates when guns were recovered and when they were traced. However, the recovery dates were missing for 30% of the records overall and were particularly problematic for years prior to 1998. For this reason, the main analysis is based on request dates. The auxiliary analysis for 2000-

increased in 2002 (1% and 6%, respectively) but by less than total traces (8%). Therefore, the disproportionate growth in AR traces in 2002 shown in Table 6-1 may have been due to tracing of older AWs by newly participating police agencies.

#### 6.2.2.4. *Summary of the ATF Gun Tracing Analysis*

Complexities arising from recent changes in the use of gun tracing by law enforcement warrant caution in the interpretation of ATF gun tracing data. Notwithstanding, the data suggest that use of AWs in crime, though relatively rare from the start, has been declining. The percentage of gun traces that were for AWs plummeted 70% between 1992-1993 and 2001-2002 (from 5.4% to 1.6%), and this trend did not begin until the year of the AW ban. On a year-to-year basis, AW traces generally increased less or declined by more than other gun traces. Moreover, in years when tracing volume declined – that is, years when changes in reporting practices were least likely to distort the data – traces of AWs fell 3 to 6 times faster than gun traces in general. The drop in AW use seemed most apparent for APs and LCMM rifles (banned in 1998). Inferences were less clear for domestic ARs, but assessment of those guns is complicated by the possible substitution of post-ban legal variations.

### 6.3. Local Analyses of Guns Recovered By Police

Due to concerns over the validity of national ATF tracing data for investigating the types of guns used in crime, we sought to confirm the preceding findings using local data on guns recovered by police. To this end, we examined data from half a dozen localities and time periods.

- All guns recovered by the Baltimore Police Department from 1992 to 2000 (N=33,933)
- All guns recovered by the Metro-Dade Police Department (Miami and Dade County, Florida) from 1990 to 2000 (N=39,456)
- All guns recovered by the St. Louis Police Department from 1992 to 2003 (N=34,143)
- All guns recovered by the Boston Police Department (as approximated by trace requests submitted by the Department to ATF) from 1991 to 1993 and 2000 to 2002 (N=4,617)<sup>47</sup>

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2002 focuses on guns both recovered and traced in the same year because it is likely that some guns recovered in 2002 had not yet been traced by the spring of 2003 when this database was created. Using only guns recovered and traced in the same year should mitigate this bias.

<sup>47</sup> The Boston Police Department has been tracing guns comprehensively since 1991 (Kennedy et al., 1996). However, we encountered difficulties in identifying Boston Police Department traces for several years in the mid-1990s. For this reason, we chose to contrast the 1991 to 1993 period with the 2000 to 2002 period.

- Guns recovered during murder investigations in Milwaukee County from 1991 to 1998 (N=592)<sup>48</sup>
- Guns linked to serious crimes in Anchorage and other parts of Alaska and submitted to state firearm examiners for evidentiary testing from 1987 to 2000 (N=900)<sup>49</sup>

The selection of these particular locations and samples reflects data availability.<sup>50</sup> The locations were not selected randomly, and some of the samples are small for conducting trend analysis of relatively rare events (i.e., AW recoveries). Accordingly, we must use caution in generalizing the results to other places. However, the data sources reflect a wide geographic range and cover post-ban periods extending through at least the latter 1990s (and typically through the year 2000 or beyond). To the extent that the results are similar across these jurisdictions, therefore, we can have more confidence that they reflect national patterns.

In each jurisdiction, we examined pre-post changes in recoveries of AWs (focusing on the domestic AW group defined earlier) and substitution of post-ban AW models for the banned models. Where possible, we conducted separate analyses of all AW recoveries and those linked specifically to violent crimes.<sup>51</sup> We also differentiated between AP and AR trends using the larger databases from Baltimore, Miami, and St. Louis. But since most of these databases do not extend more than two years beyond 1998, we do not present analyses specifically for LCMM rifles.

Key summary results are summarized in Table 6-2, while more detailed results from each site appear at the end of the chapter in Tables 6-3 through 6-6 and Figures 6-2 through 6-6.<sup>52</sup> The number of AW recoveries declined by 28% to 82% across these

<sup>48</sup> The data are described in reports from the Medical College of Wisconsin (Hargarten et al., 1996; 2000) and include guns used in the murders and other guns recovered at the crime scenes. Guns are recovered in approximately one-third of Milwaukee homicide cases.

<sup>49</sup> The data include guns submitted by federal, state, and local agencies throughout the state. Roughly half come from the Anchorage area. Guns submitted by police to the state lab are most typically guns that were used in major crimes against persons (e.g. murder, attempted murder, assault, robbery).

<sup>50</sup> We contacted at least 20 police departments and crime labs in the course of our data search, focusing much of our attention on police departments participating in ATF's Youth Crime Gun Interdiction Initiative (YCGII) (ATF, 1997; 1999). Departments participating in the YCGII submit data to ATF on all guns that they recover. Though the YCGII did not begin until 1996 (well after the implementation of the AW ban), we suspected that these departments would be among those most likely to have electronically-stored gun data potentially extending back in time to before the ban. Unfortunately, most of these departments either did not have their gun data in electronic format or could not provide data for other reasons (e.g., resource constraints). In the course of our first AW study (Roth and Koper, 1997), we contacted many other police departments that also did not have adequate data for the study.

<sup>51</sup> All of the Milwaukee and Anchorage analyses were limited to guns involved in murders or other serious crimes. Despite evidence of a decline, AW recoveries linked to violence were too rare in Boston to conduct valid test statistics.

<sup>52</sup> We omitted guns recovered in 1994 from both the pre and post-ban counts because the speculative price increases for AWs that occurred in 1994 (see previous section and Roth and Koper, 1997, Chapter 4) raise questions about the precise timing of the ban's impact on AW use during that year, thereby clouding the designation of the intervention point. This is particularly a concern for the Baltimore analysis due to a

locations and time periods, but the discussion below focuses on changes in AWs as a share of crime guns in order to control for general trends in gun crime and gun seizures. Prior to the ban, AWs ranged from about 1% of guns linked to violent crimes in St. Louis to nearly 6% of guns recovered in Milwaukee murder cases.<sup>53</sup>

AWs dropped as share of crime guns in all jurisdictions after the ban. Reductions ranged from a low of 17% in Milwaukee (based on guns linked to homicides) to a high of 72% in Boston (based on all crime guns) but were generally between 32% and 40%.<sup>54, 55</sup> A decline in the use of AWs relative to other guns was generally apparent whether examining all AW recoveries or just those linked to violent crimes.<sup>56</sup> An exception was in St. Louis, where

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state AP ban that took effect a few months prior to the federal AW ban.

<sup>53</sup> These figures should be treated as approximations of the prevalence of AWs. On the one hand, the numbers may understate the prevalence of AWs to a small degree because they are based on only the domestic AW group defined earlier. Based on analysis of national ATF gun tracing data, we estimated previously that the domestic AW group accounts for 82% of AWs used in crime (Roth and Koper, 1997, Chapter 5). To further test the reliability of this assessment, we investigated the prevalence of all banned AW models among guns recovered in Baltimore using an ATF list of all guns defined as AWs under the 1994 Crime Act criteria (118 model and caliber combinations). We chose the Baltimore database because it provides a complete inventory of guns recovered by police in that city during the study period and, having been maintained by crime lab personnel, is particularly thorough with regard to make and model identifications. Though there was some ambiguity in classifying a small number of AK-type semiautomatic rifles (there are many civilian variations of the AK-47 rifle, some of which were legal under the 1994 legislation), our examination suggested that the domestic AW group accounted for approximately 90% of the AWs recovered in Baltimore. (In addition, including all AWs had virtually no effect on the pre-post changes in AW use in Baltimore.) But as discussed previously, the counts could also overstate AW use to some degree because imprecision in the identification of gun models in some data sources may have resulted in some legalized firearms being counted as banned AWs.

<sup>54</sup> The AW counts for Miami also include Interdynamics KG9 and KG99 models. These models were produced during the early 1980s and were forerunners to the Intratec models (ATF restricted the KG9 during the early 1980s because it could be converted too easily to fully automatic fire). These weapons were very rare or non-existent in most of the local data sources, but they were more common in Miami, where Interdynamics was formerly based. Including these guns increased the AW count in Miami by about 9% but did not affect pre-post changes in AW recoveries.

<sup>55</sup> State AW legislation passed in Maryland and Massachusetts could have had some impact on AW trends in Baltimore and Boston, respectively. Maryland implemented an AP ban, similar in coverage to the federal AW ban, in June 1994 (Maryland has also required background checks for retail sales of a broader list of state-defined AWs since 1989), and Massachusetts implemented additional legislation on federally-defined AWs in late 1998. The timing and scope of these laws make them largely redundant with the federal ban, so they should not unduly complicate inferences from the analysis. However, Maryland forbids additional transfers of grandfathered APs, and Massachusetts has imposed additional requirements for possession and transfer of LCMs and guns accepting LCMs. Both states also have enhanced penalties for certain crimes involving APs, LCMs, and/or guns accepting LCMs. Hence, the ban on AWs was arguably strengthened in Baltimore and Boston, relative to the other jurisdictions under study. This does not appear to have affected trends in AW use in Baltimore, which were very similar to those found in the other study sites. However, use of AWs and combined use of AWs and post-ban AW substitutes declined more in Boston than in any other study site. Although the trends in Boston could reflect ongoing, post-2000 reductions in use of AWs and similar weapons (Boston was one of the only study sites from which we obtained post-2000 data), it is possible that the Massachusetts legislation was also a contributing factor.

<sup>56</sup> There may be some inconsistency across jurisdictions in the identification of guns associated with violent crimes. In Miami, for example, 28% of the guns had an offense code equal to “other/not listed,” and this percentage was notably higher for the later years of the data series.

**Table 6-2. Pre-Post Changes in Assault Weapons As a Share of Recovered Crime Guns For Selected Localities and Time Periods: Summary Results (Total Number of Assault Weapons for Pre and Post Periods in Parentheses) <sup>a</sup>**

Locality and Time Period	AWs	AWs (Linked to Violence)	APs	ARs	AWs and Post-Ban Substitutes
Baltimore (all recoveries) pre=1992-1993, post=1995-2000	-34%*** (425)	-41%** (75)	-35%*** (383)	-24% (42)	-29%*** (444)
Miami-Dade (all recoveries) pre=1990-1993, post=1995-2000	-32%*** (733)	-39%*** (101)	-40%*** (611)	37%* (115)	-30%*** (746)
St. Louis (all recoveries) pre=1992-1993, post=1995-2003	-32%*** (306)	1% (28)	-34%*** (274)	10% (32)	-24%** (328)
Boston (all recoveries) pre=1991-1993, post=2000-2002	-72%*** (71)	N/A	N/A	N/A	-60%*** (76)
Milwaukee (recoveries in murder cases) pre=1991-1993, post=1995-1998	N/A	-17% (28)	N/A	N/A	2% (31)
Anchorage, AK (recoveries in serious crimes) pre=1987-1993, post=1995-2000	N/A	-40% (24)	N/A	N/A	-40% (24)

a. Based on Intratec group, SWD group, AR-15 group, and Calico and Feather models. See the text for additional details about each sample and Tables 6-3 through 6-6 for more detailed results from each locality.

\* Statistically significant change at chi-square p level < .1

\*\* Statistically significant change at chi-square p level < .05

\*\*\* Statistically significant change at chi-square p level < .01



AWs declined as share of all guns but not of guns linked to violent crimes, though the latter test was based on rather small samples.

These reductions were not due to any obvious pre-ban trends (see Figures 6-2 through 6-6 at the end of the chapter). On the contrary, AW recoveries reached a peak in most of these jurisdictions during 1993 or 1994 (Boston, which is not shown in the graphs due to missing years, was an exception). We tested changes in AW prevalence using simple chi-square tests since there were no observable pre-existing time trends in the data. Due to the small number of AWs in some of these samples, these changes were not all statistically significant. Nonetheless, the uniformity of the results is highly suggestive, especially when one considers the consistency of these results with those found in the national ATF tracing analysis.

The changes in Tables 6-2 through 6-6 reflect the average decline in recoveries of AWs during the post-ban period in each locality. However, some of these figures may understate reductions to date. In several of the localities, the prevalence of AWs among crime guns was at, or close to, its lowest mark during the most recent year analyzed (see Figures 6-2 through 6-6 at the end of the chapter), suggesting that AW use continues to decline. In Miami, for example, AWs accounted for 1.7% of crime guns for the whole 1995 to 2000 period but had fallen to 1% by 2000. Further, the largest AW decline was recorded in Boston, one of two cities for which data extended beyond the year 2000 (however, this was not the case in St. Louis, the other locality with post-2000 data).

Breakouts of APs and ARs in Baltimore, Miami, and St. Louis show that the decline in AW recoveries was due largely to APs, which accounted for the majority of AWs in these and almost all of the other localities (the exception was Anchorage, where crimes with rifles were more common, as a share of gun crimes, than in the other sites). Pre-post changes in recoveries of the domestic AR group weapons, which accounted for less than 1% of crime guns in Baltimore, Miami, and St. Louis, were inconsistent. AR recoveries declined after the ban in Baltimore but increased in St. Louis and Miami. As discussed previously, however, the AR figures may partly reflect the substitution of post-ban, legalized versions of these rifles, thus overstating post-ban use of the banned configurations. Further, trends for these particular rifles may not be indicative of those for the full range of banned rifles, including the various foreign rifles banned by the 1994 law and the import restrictions of 1989 and 1998 (e.g., see the ATF gun tracing analysis of LCMM rifles).<sup>57</sup>

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<sup>57</sup> As discussed in the last chapter, our research design focused on common AWs that were likely to be most affected by the 1994 ban as opposed to earlier regulations (namely, the 1989 import ban) or other events (e.g., company closings or model discontinuations prior to 1994). However, an auxiliary analysis with the Baltimore data revealed a statistically meaningful drop in recoveries of all ARs covered by the 1994 legislation (not including the LCMM rifles) that was larger than that found for just the domestic group ARs discussed in the text. Similarly, an expanded AR analysis in Miami showed that total AR recoveries declined after the ban, in contrast to the increase found for the domestic group ARs. (Even after expanding the analysis, ARs still accounted for no more than 0.64% of crime guns before the ban in both locations. As with the domestic AR group, there are complexities in identifying banned versus non-banned versions of some of the other ARs, so these numbers are approximations.) Consequently, a more nuanced view of AR trends may be that AR use is declining overall, but this decline may be due largely to the 1989 import

Finally, the overall decline in AW use was only partially offset by substitution of the post-ban legalized models. Even if the post-ban models are counted as AWs, the share of crime guns that were AWs still fell 24% to 60% across most jurisdictions. The exception was Milwaukee where recoveries of a few post-ban models negated the drop in banned models in a small sample of guns recovered during murder investigations.<sup>58</sup>

#### 6.4. Summary

Consistent with predictions derived from the analysis of market indicators in Chapter 5, analyses of national ATF gun tracing data and local databases on guns recovered by police in several localities have been largely consistent in showing that criminal use of AWs, while accounting for no more than 6% of gun crimes even before the ban, declined after 1994, independently of trends in gun crime. In various places and times from the late 1990s through 2003, AWs typically fell by one-third or more as a share of guns used in crime.<sup>59, 60</sup> Some of the most recent, post-2000 data suggest

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restrictions that predated the AW ban. It is not yet clear that there has been a decline in the most common ARs prohibited exclusively by the 1994 ban.

<sup>58</sup> This was not true when focusing on just those guns that were used in the incident as opposed to all guns recovered during the investigations. However, the samples of AWs identified as murder weapons were too small for valid statistical tests of pre-post changes.

<sup>59</sup> These findings are also supported by prior research in which we found that reported thefts of AWs declined 7% in absolute terms and 14% as a fraction of stolen guns in the early period following the ban (i.e., late 1994 through early 1996) (Koper and Roth, 2002a, p. 21). We conducted that analysis to account for the possibility that an increase in thefts of AWs might have offset the effect of rising AW prices on the availability of AWs to criminals. Because crimes with AWs appear to have declined after the ban, the theft analysis is not as central to the arguments in this paper.

<sup>60</sup> National surveys of state prisoners conducted by the federal Bureau of Justice Statistics show an increase from 1991 to 1997 in the percentage of prisoners who reported having used an AW (Beck et al., 1993; Harlow, 2001). The 1991 survey (discussed in Chapter 3) found that 2% of violent gun offenders had carried or used an AW in the offense for which they were sentenced (calculated from Beck et al. 1993, pp. 18,33). The comparable figure from the 1997 survey was nearly 7% (Harlow, 2001, pp.3, 7).

Although these figures appear contrary to the patterns shown by gun recovery data, there are ambiguities in the survey findings that warrant caution in such an interpretation. First, the definition of an AW (and most likely the respondents' interpretation of this term) was broader in the 1997 survey. For the 1991 survey, respondents were asked about prior ownership and use of a "...military-type weapon, such as an Uzi, AK-47, AR-15, or M-16" (Beck et al., 1993, p. 18), all of which are ARs or have AR variations. The 1997 survey project defined AWs to "...include the Uzi, TEC-9, and the MAC-10 for handguns, the AR-15 and AK-47 for rifles, and the 'Street Sweeper' for shotguns" (Harlow, 2001, p. 2). (Survey codebooks available from the Inter-University Consortium for Political and Social Research also show that the 1997 survey provided more detail and elaboration about AWs and their features than did the 1991 survey, including separate definitions of APs, ARs, and assault shotguns.)

A second consideration is that many of the respondents in the 1997 survey were probably reporting criminal activity prior to or just around the time of the ban. Violent offenders participating in the survey, for example, had been incarcerated nearly six years on average at the time they were interviewed (Bureau of Justice Statistics, 2000, p. 55). Consequently, the increase in reported AW use may reflect an upward trend in the use of AWs from the 1980s through the early to mid 1990s, as well as a growing recognition of these weapons (and a greater tendency to report owning or using them) stemming from publicity about the AW issue during the early 1990s.

Finally, we might view the 1997 estimate skeptically because it is somewhat higher than that from most other sources. Nevertheless, it is within the range of estimates discussed earlier and could reflect a



reductions as high as 70%.<sup>61</sup> This trend has been driven primarily by a decline in the use of APs, which account for a majority of AWs used in crime. AR trends have been more varied and complicated by the substitution of post-ban guns that are very similar to some banned ARs. More generally, however, the substitution of post-ban AW-type models with fewer military features has only partially offset the decline in banned AWs.

These findings raise questions as to the whereabouts of surplus AWs, particularly APs, produced just prior to the ban. Presumably, many are in the hands of collectors and speculators holding them for their novelty and value.<sup>62</sup> Even criminal possessors may be more sensitive to the value of their AWs and less likely to use them for risk of losing them to police.

Finally, it is worth noting the ban has not completely eliminated the use of AWs, and, despite large relative reductions, the share of gun crimes involving AWs is similar to that before the ban. Based on year 2000 or more recent data, the most common AWs continue to be used in up to 1.7% of gun crimes.

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somewhat higher use of AWs among the subset of offenders who are most active and/or dangerous; recall that the highest estimate of AW use among the sources examined in this chapter came from a sample of guns recovered during murder investigations in Milwaukee (also see the discussion of offender surveys and AWs in Chapter 3).

<sup>61</sup> Developing a national estimate of the number of AW crimes prevented by the ban is complicated by the range of estimates of AW use and changes therein derived from different data sources. Tentatively, nonetheless, it appears the ban prevents a few thousand crimes with AWs annually. For example, using 2% as the best estimate of the share of gun crimes involving AWs prior to the ban (see Chapter 3) and 40% as a reasonable estimate of the post-ban drop in this figure implies that almost 2,900 murders, robberies, and assaults with AWs were prevented in 2002 (this assumes that 1.2% of the roughly 358,000 gun murders, gun robberies, and gun assaults reported to police in 2002 [see the *Uniform Crime Reports*] involved AWs but that 2% would have involved AWs had the ban not been in effect). Even if this estimate is accurate, however, it does not mean the ban prevented 2,900 gun crimes in 2002; indeed, the preceding calculation assumes that offenders prevented from using AWs committed their crimes using other guns. Whether forcing such weapon substitution can reduce the number of persons wounded or killed in gun crimes is considered in more detail in Chapter 9.

<sup>62</sup> The 1997 national survey of state prisoners discussed in footnote 60 found that nearly 49% of AW offenders obtained their gun from a “street” or illegal source, in contrast to 36% to 42% for other gun users (Harlow, 2001, p. 9). This could be another sign that AWs have become harder to acquire since the ban, but the data cannot be used to make an assessment over time.

**Table 6-3. Trends in Police Recoveries of Domestic Assault Weapons in Baltimore, 1992-2000<sup>a</sup>**

	<u><b>Pre-Ban Period</b></u>	<u><b>Post-Ban Period</b></u>	<u><b>Change</b></u>
<u><b>A. All Recoveries</b></u>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2000	
Total AWs	135	290	
Annual Mean	67.5	48.33	-28%
AW's as % of Guns	1.88%	1.25%	-34% **
APs	123	260	
Annual Mean	61.5	43.33	-30%
APs as % of Guns	1.71%	1.12%	-35% **
ARs	12	30	
Annual Mean	6	5	-17%
ARs as % of Guns	0.17%	0.13%	-24%
Total AWs and Substitutes	135	309	
Annual Mean	67.5	51.5	-24%
AWs/Subs as % of Guns	1.88%	1.33%	-29% **
<u><b>B. Recoveries Linked to Violent Crimes<sup>b</sup></b></u>			
Total AWs	28	47	
Annual Mean	14	7.83	-44%
AWs as % of Violent Crime Guns	2.1%	1.24%	-41% *

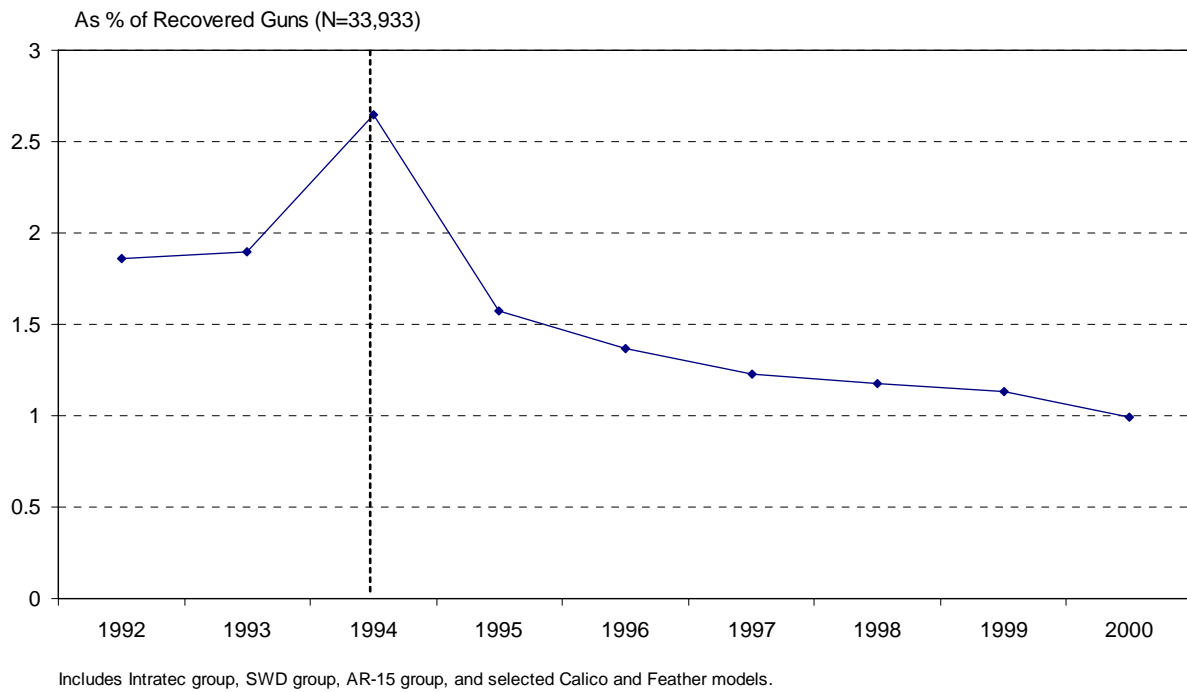
a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

b. Murders, assaults, and robberies

\* Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance).

\*\* Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance).

**Figure 6-2. Police Recoveries of Assault Weapons in  
Baltimore, 1992-2000**



**Table 6-4. Trends in Police Recoveries of Domestic Assault Weapons in Miami (Metro-Dade), 1990-2000 <sup>a</sup>**

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<b><u>A. All Recoveries</u></b>	Jan. 1990-Dec. 1993	Jan. 1995-Dec. 2000	
Total AWs	403	330	
Annual Mean	100.75	55	-45%
AW's as % of Guns	2.53%	1.71%	-32%***
APs	355	256	
Annual Mean	88.75	42.67	-52%
APs as % of Guns	2.23%	1.33%	-40%***
ARs	43	72	
Annual Mean	10.75	12	12%
ARs as % of Guns	0.27%	0.37%	37%*
Total AWs and Substitutes	403	343	
Annual Mean	100.75	57.17	-43%
AWs/Subs as % of Guns	2.53%	1.78%	-30%***
<b><u>B. Recoveries Linked to Violent Crimes <sup>b</sup></u></b>			
Total AWs	69	32	
Annual Mean	17.25	5.33	-69%
AWs as % of Violent Crime Guns	2.28%	1.39%	-39%**

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

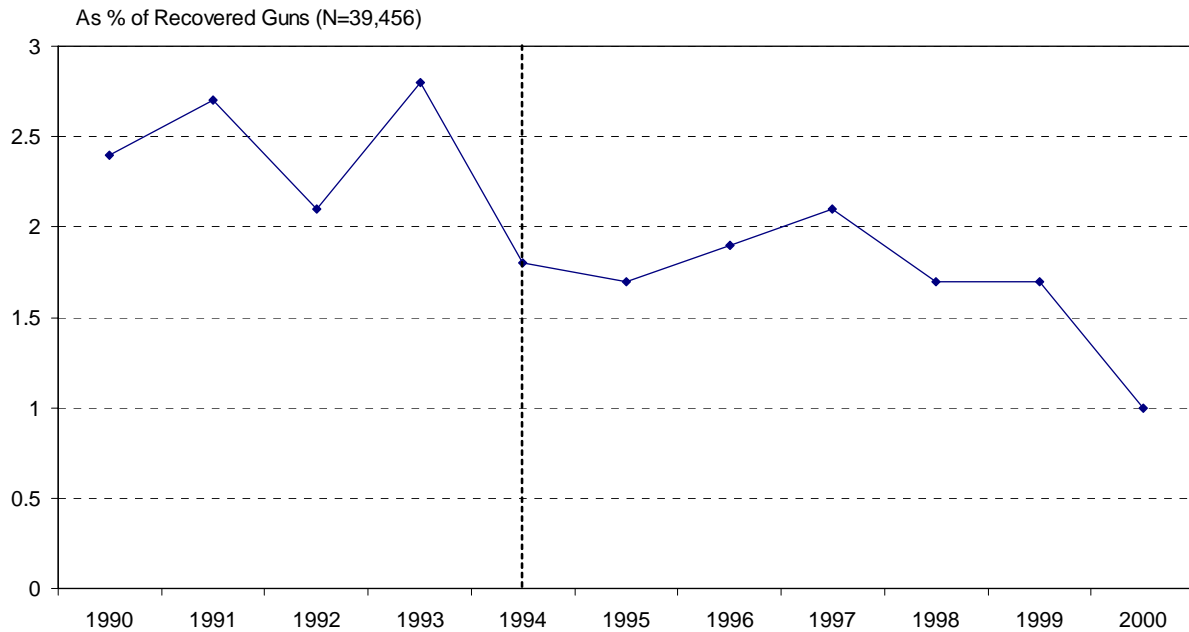
b. Murders, assaults, and robberies

\* Chi-square p level < .1 (changes in percentages of guns that were AWs/APs/ARs/AW-substitutes were tested for statistical significance)

\*\* Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-substitutes were tested for statistical significance)

\*\*\* Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-substitutes were tested for statistical significance)

**Figure 6-3. Police Recoveries of Assault Weapons in Miami  
(Metro-Dade), 1990-2000**



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

**Table 6-5. Trends in Police Recoveries of Domestic Assault Weapons in St. Louis, 1992-2003 <sup>a</sup>**

	<u><b>Pre-Ban Period</b></u>	<u><b>Post-Ban Period</b></u>	<u><b>Change</b></u>
<u><b>A. All Recoveries</b></u>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2003	
Total AWs	94	212	
Annual Mean	47	23.56	-50%
AW's as % of Guns	1.33%	0.91%	-32% **
APs	87	187	
Annual Mean	43.5	20.78	-52%
APs as % of Guns	1.23%	0.81%	-34% **
ARs	7	25	
Annual Mean	3.5	2.78	-21%
ARs as % of Guns	0.1%	0.11%	10%
Total AWs and Substitutes	94	234	
Annual Mean	47	26	-45%
AWs/Subs as % of Guns	1.33%	1.01%	-24% *
<u><b>B. Recoveries Linked to Violent Crimes <sup>b</sup></b></u>			
Total AWs	8	20	
Annual Mean	4	2.2	-45%
AWs as % of Violent Crime Guns	0.8%	0.81%	1%

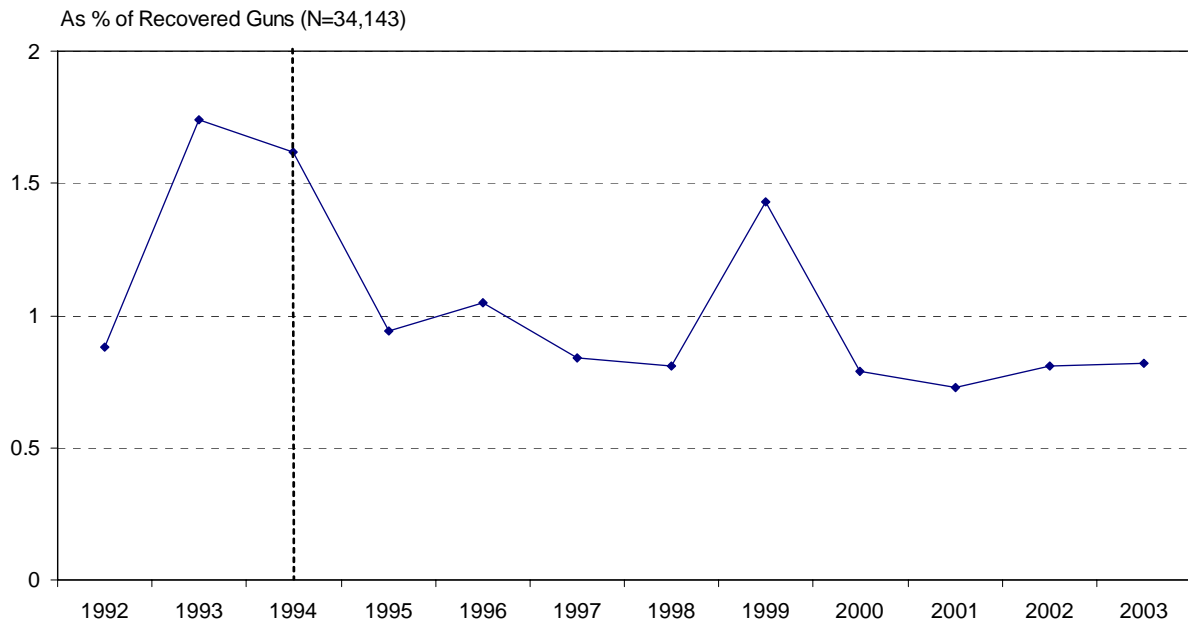
a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

b. Murders, assaults, and robberies

\* Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

\*\* Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

**Figure 6-4. Police Recoveries of Assault Weapons in St.  
Louis, 1992-2003**



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

**Table 6-6. Trends in Police Recoveries of Domestic Assault Weapons in Boston, Milwaukee, and Anchorage (Alaska) <sup>a</sup>**

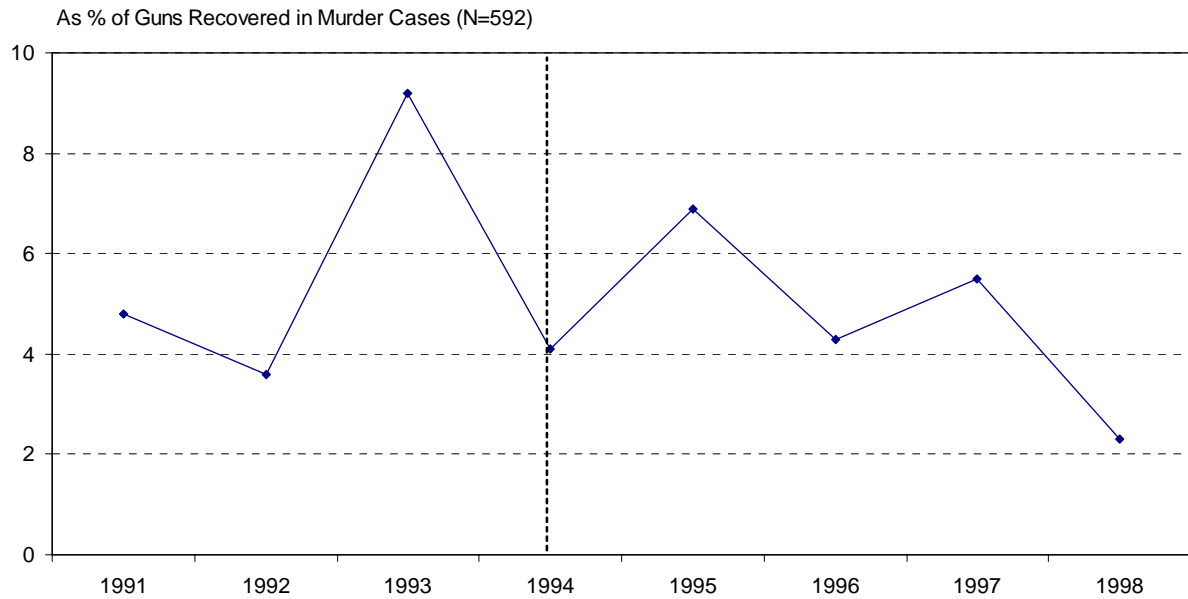
	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<b><u>Boston</u></b>	Jan. 1991-Dec. 1993	Jan. 2000-Dec. 2002	
(All Gun Traces)			
AWs	60	11	
Annual Mean	20	3.7	-82%
AWs as % of Guns	2.16%	0.6%	-72%*
AWs and Substitutes	60	16	
Annual Mean	20	5.3	-74%
AWs/Subs as % of Guns	2.16%	0.87%	-60%*
<b><u>Milwaukee</u></b>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
(Guns Recovered in Murder Cases)			
AWs	15	13	
Annual Mean	5	3.25	-35%
AWs as % of Guns	5.91%	4.91%	-17%
AWs and Substitutes	15	16	
Annual Mean	5	4	-20%
AWs/Subs as % of Guns	5.91%	6.04%	2%
<b><u>Anchorage</u></b>	Jan. 1987-Dec. 1993	Jan. 1995-Dec. 2000	
(Guns Tested for Evidence)			
AWs	16	8	
Annual Mean	2.29	1.33	-42%
AW's as % of Guns	3.57%	2.13%	-40%
AWs and Substitutes	N/A	N/A	

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

\* Chi-square p level < .01 (changes in percentages of guns that were AWs/AW-substitutes were tested for statistical significance)

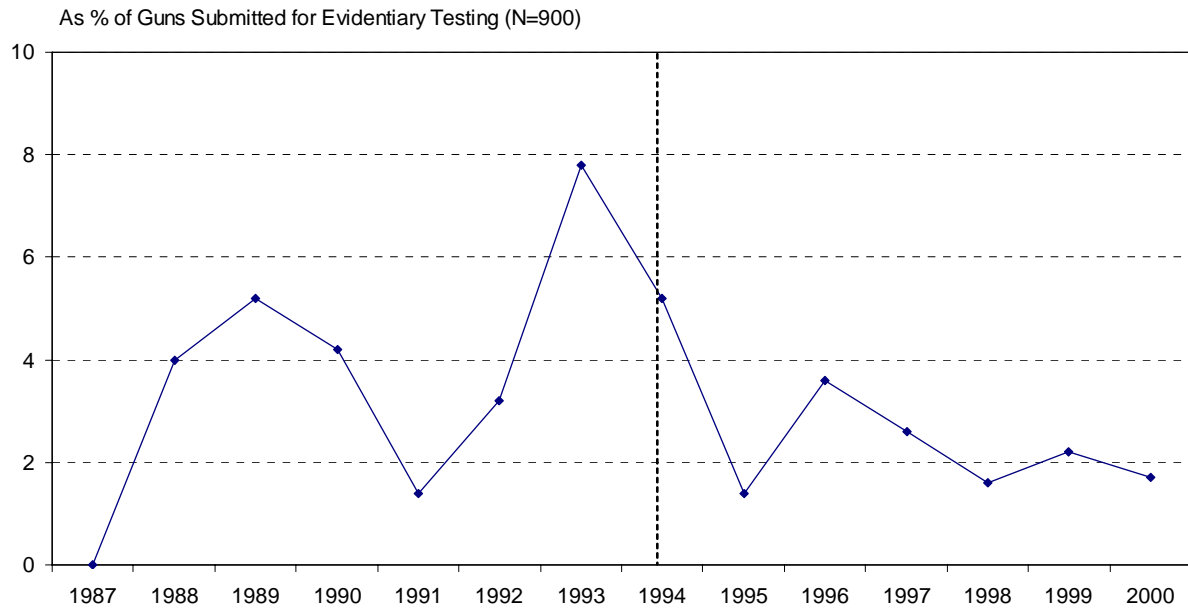


**Figure 6-5. Assault Weapons Recovered in Milwaukee County  
Murder Cases, 1991-1998**



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

**Figure 6-6. Police Recoveries of Assault Weapons in  
Anchorage (Alaska), 1987-2000**



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

## 7. MARKET INDICATORS FOR LARGE CAPACITY MAGAZINES: PRICES AND IMPORTATION

The previous chapters examined the AW-LCM ban's impact on the availability and criminal use of AWs. In this chapter and the next, we consider the impact of the ban's much broader prohibition on LCMs made for numerous banned and non-banned firearms. We begin by studying market indicators. Our earlier study of LCM prices for a few gun models revealed that prices rose substantially during 1994 and into 1995 (Roth and Koper, 1997, Chapter 4). Prices of some LCMs remained high into 1996, while others returned to pre-ban levels or oscillated more unpredictably. The price increases may have reduced LCM use at least temporarily in the short-term aftermath of the ban, but we could not confirm this in our prior investigation.

### 7.1. Price Trends for Large Capacity Magazines

For this study, we sought to approximate longer term trends in the prices at which users could purchase banned LCMs throughout the country. To that end, we analyzed quarterly data on the prices of LCMs advertised by eleven gun and magazine distributors in *Shotgun News*, a national gun industry publication, from April 1992 to December 1998.<sup>63</sup> Those prices are available to any gun dealer, and primary market retailers generally re-sell within 15% of the distributors' prices.<sup>64</sup> The distributors were chosen during the course of the first AW study (Roth and Koper, 1997) based on the frequency with which they advertised during the April 1992 to June 1996 period. For each quarterly period, project staff coded prices for one issue from a randomly selected month. We generally used the first issue of each selected month based on a preliminary, informal assessment suggesting that the selected distributors advertised more frequently in those issues. In a few instances, first-of-month issues were unavailable to us or provided too few observations, so we substituted other issues.<sup>65</sup> Also, we were unable to obtain *Shotgun News* issues for the last two quarters of 1996. However, we aggregated the data annually to study price trends, and the omission of those quarters did not appear to affect the results (this is explained further below).

We ascertained trends in LCM prices by conducting hedonic price analyses,

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<sup>63</sup> The *Blue Book of Gun Values*, which served as the data source for the AW price analysis, does not contain ammunition magazine prices.

<sup>64</sup> According to gun market experts, retail prices track wholesale prices quite closely (Cook et al., 1995, p. 71). Retail prices to eligible purchasers generally exceed wholesale (or original-purchase) prices by 3% to 5% in the large chain stores, by about 15% in independent dealerships, and by about 10% at gun shows (where overhead costs are lower).

<sup>65</sup> The decision to focus on first-of-month issues was made prior to data collection for price analysis update. For the earlier study (Roth and Koper, 1997), project staff coded data for one or more randomly selected issues of every month of the April 1992 to June 1996 period. For this analysis, we utilized data from only the first-of-month issues selected at random during the prior study. If multiple first-of-month issues were available for a given quarter, we selected one at random or based on the number of recorded advertisements. If no first-of-month issue was available for a given quarter, we selected another issue at random from among those coded during the first study.

similar to those described in the AW price analysis (Chapter 5), in which we regressed inflation-adjusted LCM prices (logged) on several predictors: magazine capacity (logged), gun make (for which the LCM was made), year of the advertisement, and distributor. We cannot account fully for the meaning of significant distributor effects. They may represent unmeasured quality differentials in the merchandise of different distributors, or they may represent other differences in stock volume or selling or service practices between the distributors.<sup>66</sup> We included the distributor indicators when they proved to be significant predictors of advertised price. In addition, we focused on LCMs made for several of the most common LCM-compatible handguns and rifles, rather than try to model the differences in LCM prices between the several hundred miscellaneous makes and models of firearms that were captured in the data. Finally, for both the handgun and rifle models, we created and tested seasonal indicator variables to determine if their incorporation would affect the coefficient for 1996 (the year with winter/spring data only), but they proved to be statistically insignificant and are not shown in the results below.<sup>67</sup>

#### *7.1.1. Large Capacity Magazines for Handguns*

The handgun LCM analysis tracks the prices of LCMs made for Intratec and Cobray (i.e., SWD) APs and non-banned semiautomatic pistols made by Smith and Wesson, Glock, Sturm Ruger, Sig-Sauer, Taurus, and Beretta (each of the manufacturers in the former group produces numerous models capable of accepting LCMs). In general, LCMs with greater magazine capacities commanded higher prices, and there were significant price differentials between LCMs made for different guns and sold by different distributors (see Table 7-1). Not surprisingly, LCMs made for Glock handguns were most expensive, followed by those made for Beretta and Sig-Sauer firearms.

Turning to the time trend indicators (see Table 7-1 and Figure 7-1), prices for these magazines increased nearly 50% from 1993 to 1994, and they rose another 56% in 1995. Prices declined somewhat, though not steadily, from 1996 to 1998. Nevertheless, prices in 1998 remained 22% higher than prices in 1994 and nearly 80% higher than those in 1993.

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<sup>66</sup> For example, one possible difference between the distributors may have been the extent to which they sold magazines made of different materials (e.g., steel, aluminum, etc.) or generic magazines manufactured by companies other than the companies manufacturing the firearms for which the magazines were made. For example, there were indications in the data that 3% of the handgun LCMs and 10% of the AR-15 and Mini-14 rifle LCMs used in the analyses (described below) were generic magazines. We did not control for these characteristic, however, because such information was often unclear from the advertisements and was not recorded consistently by coders.

<sup>67</sup> Project staff coded all LCM advertisements by the selected distributors. Therefore, the data are inherently weighted. However, the weights are based on the frequency with which the different LCMs were advertised (i.e., the LCMs that were advertised most frequently have the greatest weight in the models) rather than by production volume.

**Table 7-1. Regression of Handgun and Rifle Large Capacity Magazine Prices on Annual Time Indicators, 1992-1998, Controlling for Gun Makes/Models and Distributors**

	Handgun LCMs (n=1,277)		Rifle LCMs (n=674)	
	Estimate	T value	Estimate	T value
Constant	-1.79	-12.74***	-4.10	-19.12***
1992	-0.19	-2.11**	-0.48	-4.20***
1993	-0.38	-6.00***	-0.55	-6.14***
1995	0.44	6.88***	-0.25	-2.64***
1996	0.29	4.05***	-0.12	-0.93
1997	0.36	6.33***	-0.31	-3.68***
1998	0.20	3.51***	-0.44	-5.19***
Rounds (logged)	0.26	5.73***	0.84	15.08***
Cobray	-0.36	-4.15***		
Glock	0.41	8.15***		
Intratec	-0.40	-4.18***		
Ruger	-0.42	-7.79***		
Smith&Wesson	-0.08	-1.71*		
Sig-Sauer	0	-0.09		
Taurus	-0.31	-6.10***		
AK-type			-0.25	-3.15***
Colt AR-15			0.14	1.68*
Ruger Mini-14			-0.08	-0.92
Distributor 1	-0.72	-16.38***	-0.35	-5.15***
Distributor 2	-0.15	-0.97	-0.83	-5.24***
Distributor 3	-0.16	-3.93***	0.19	2.69***
Distributor 4	-0.55	-5.72***	0.16	0.80
Distributor 5	-0.07	-1.79*	-0.18	-2.65***
Distributor 6	-0.53	-1.23	-0.12	-0.32
Distributor 7	-1.59	-3.70***	-0.10	-0.91
Distributor 8			0.14	0.70
Distributor 9	-0.91	-12.52***	-0.48	-4.00***
F statistic	58.76		21.22	
(p value)	<.0001		<.0001	
Adj. R-square	0.51		0.38	

Year indicators are interpreted relative to 1994, and distributors are interpreted relative to distributor 10.

Handgun makes are relative to Beretta and rifle models are relative to SKS.

\* Statistically significant at  $p \leq .10$ .

\*\* Statistically significant at  $p \leq .05$ .

\*\*\* Statistically significant at  $p \leq .01$ .

**Figure 7-1. Annual Price Trends for Large Capacity Magazines, 1992-1998**



Based on 1,277 sampled ads for LCMs fitting models of 8 handgun makers and 674 sampled ads for LCMs fitting 4 rifle model groups.

### 7.1.2. Large Capacity Magazines for Rifles

We approximated trends in the prices of LCMs for rifles by modeling the prices of LCMs manufactured for AR-15, Mini-14, SKS,<sup>68</sup> and AK-type rifle models (including various non-banned AK-type models). As in the handgun LCM model, larger LCMs drew higher prices, and there were several significant model and distributor effects. AR-15 magazines tended to have the highest prices, and magazines for AK-type models had the lowest prices (Table 7-1).

Like their handgun counterparts, prices for rifle LCMs increased over 40% from 1993 to 1994, as the ban was debated and implemented (see Table 7-1 and Figure 7-1). However, prices declined over 20% in 1995. Following a rebound in 1996, prices moved downward again during 1997 and 1998. Prices in 1998 were over one third lower than the peak prices of 1994 and were comparable to pre-ban prices in 1992 and 1993.

<sup>68</sup> The SKS is a very popular imported rifle (there are Russian and Chinese versions) that was not covered by either the 1989 AR import ban or the 1994 AW ban. However, importation of SKS rifles from China was discontinued in 1994 due to trade restrictions.

## 7.2. Post-Ban Importation of Large Capacity Magazines

ATF does not collect (or at least does not publicize) statistics on production of LCMs. Therefore, we cannot clearly document pre-ban production trends. Nevertheless, it seems likely that gun and magazine manufacturers boosted their production of LCMs during the debate over the ban, just as AW makers increased production of AWs. Regardless, gun industry sources estimated that there were 25 million LCMs available as of 1995 (including aftermarket items for repairing magazines or converting them to LCMs) (Gun Tests, 1995, p. 30).

Moreover, the supply of LCMs continued to grow even after the ban due to importation of foreign LCMs that were manufactured prior to the ban (and thus grandfathered by the LCM legislation), according to ATF importation data.<sup>69</sup> As shown in Table 7-2, nearly 4.8 million LCMs were imported for commercial sale (as opposed to law enforcement uses) from 1994 through 2000, with the largest number (nearly 3.7 million) arriving in 1999.<sup>70</sup> During this period, furthermore, importers received permission to import a total of 47.2 million LCMs; consequently, an additional 42 million LCMs may have arrived after 2000 or still be on the way, based on just those approved through 2000.<sup>71, 72</sup>

To put this in perspective, gun owners in the U.S. possessed 25 million firearms that were equipped with magazines holding 10 or more rounds as of 1994 (Cook and Ludwig, 1996, p. 17). Therefore, the 4.7 million LCMs imported in the U.S. from 1994 through 2000 could conceivably replenish 19% of the LCMs that were owned at the time of the ban. The 47.2 million approved during this period could supply nearly 2 additional LCMs for all guns that were so equipped as of 1994.

## 7.3. Summary and Interpretations

Prices of LCMs for handguns rose significantly around the time of the ban and, despite some decline from their peak levels in 1995, remained significantly higher than pre-ban prices through at least 1998. The increase in LCM prices for rifles proved to be more temporary, with prices returning to roughly pre-ban levels by 1998.<sup>73</sup>

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<sup>69</sup> To import LCMs into the country, importers must certify that the magazines were made prior to the ban. (The law requires companies to mark post-ban LCMs with serial numbers.) As a practical matter, however, it is hard for U.S. authorities to know for certain whether imported LCMs were produced prior to the ban.

<sup>70</sup> The data do not distinguish between handgun and rifle magazines or the specific models for which the LCMs were made. But note that roughly two-thirds of the LCMs imported from 1994 through 2000 had capacities between 11 and 19 rounds, a range that covers almost all handgun LCMs as well as many rifle LCMs. It seems most likely that the remaining LCMs (those with capacities of 20 or more rounds) were primarily for rifles.

<sup>71</sup> The statistics in Table 7-2 do not include belt devices used for machine guns.

<sup>72</sup> A caveat to the number of approved LCMs is that importers may overstate the number of LCMs they have available to give themselves leeway to import additional LCMs, should they become available.

<sup>73</sup> A caveat is that we did not examine prices of smaller magazines, so the price trends described here may not have been entirely unique to LCMs. Yet it seems likely that these trends reflect the unique impact of the ban on the market for LCMs.

**Table 7-2. Large Capacity Magazines Imported into the United States or Approved For Importation for Commercial Sale, 1994-2000**

<u>Year</u>	<u>Imported</u>	<u>Approved</u>
1994	67,063	77,666
1995	3,776	2,066,228
1996	280,425	2,795,173
1997	99,972	1,889,773
1998	337,172	20,814,574
1999	3,663,619	13,291,593
2000	346,416	6,272,876
<i>Total</i>	<i>4,798,443</i>	<i>47,207,883</i>

Source: Firearms and Explosives Imports Branch, Bureau of Alcohol, Tobacco, Firearms, and Explosives. Counts do not include “links” (belt devices) or imports for law enforcement purposes.

The drop in rifle LCM prices between 1994 and 1998 may have due to the simultaneous importation of approximately 788,400 grandfathered LCMs, most of which appear to have been rifle magazines (based on the fact that nearly two-thirds had capacities over 19 rounds), as well as the availability of U.S. military surplus LCMs that fit rifles like the AR-15 and Mini-14. We can also speculate that demand for LCMs is not as great among rifle consumers, who are less likely to acquire their guns for defensive or criminal purposes.

The pre-ban supply of handgun LCMs may have been more constricted than the supply of rifle LCMs for at least a few years following the ban, based on prices from 1994 to 1998. Although there were an estimated 25 million LCMs available in the U.S. as of 1995, some major handgun manufacturers (including Ruger, Sig Sauer, and Glock) had or were close to running out of new LCMs by that time (Gun Tests, 1995, p. 30). Yet the frequency of advertisements for handgun LCMs during 1997 and 1998, as well as the drop in prices from their 1995 peak, suggests that the supply had not become particularly low. In 1998, for example, the selected distributors posted a combined total of 92 LCM ads per issue (some of which may have been for the same make, model, and capacity combinations) for just the handguns that we incorporated into our model.<sup>74</sup> Perhaps the

<sup>74</sup> Project staff found substantially more advertisements per issue for 1997 and 1998 than for earlier years. For the LCMs studied in the handgun analysis, staff recorded an average of 412 LCM advertisements per year (103 per issue) during 1997 and 1998. For 1992-1996, staff recorded an average of about 100 ads per year (25 per issue) for the same LCMs. A similar but smaller differential existed in the volume of ads for the LCMs used in the rifle analysis. The increase in LCM ads over time may reflect changes in supply and



demand for enhanced firepower among handgun consumers, who are more likely to acquire guns for crime or defense against crime, was also a factor (and perhaps a large one) putting a premium on handgun LCMs.

Although we might hypothesize that high prices depressed use of handguns with LCMs for at least a few years after the ban, a qualification to this prediction is that LCM use may be less sensitive to prices than is use of AWs because LCMs are much less expensive than the firearms they complement and therefore account for a smaller fraction of users' income (e.g., see Friedman, 1962). To illustrate, TEC-9 APs typically cost \$260 at retail during 1992 and 1993, while LCMs for the TEC-9, ranging in capacity from 30 to 36 rounds, averaged \$16.50 in *Shotgun News* advertisements (and probably \$19 or less at retail) during the same period. So, for example, a doubling of both gun and LCM prices would likely have a much greater impact on purchases of TEC-9 pistols than purchases of LCMs for the TEC-9. Users willing and able to pay for a gun that accepts an LCM are most likely willing and able to pay for an LCM to use with the gun.

Moreover, the LCM supply was enhanced considerably by a surge in LCM imports that occurred after the period of our price analysis. During 1999 and 2000, an additional 4 million grandfathered LCMs were imported into the U.S., over two-thirds of which had capacities of 11-19 rounds, a range that covers almost all handgun LCMs (as well as many rifle LCMs). This may have driven prices down further after 1998.

In sum, market indicators yield conflicting signs on the availability of LCMs. It is perhaps too early to expect a reduction in crimes with LCMs, considering that tens of millions of grandfathered LCMs were available at the time of the ban, an additional 4.8 million – enough to replenish one-fifth of those owned by civilians – were imported from 1994 through 2000, and that the elasticity of demand for LCMs may be more limited than that of firearms. And if the additional 42 million foreign LCMs approved for importation become available, there may not be a reduction in crimes with LCMs anytime in the near future.

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demand for LCMs during the study period, as well as product shifts by distributors and perhaps changes in ad formats (e.g., ads during the early period may have been more likely to list magazines by handgun model without listing the exact capacity of each magazine, in which case coders would have been more likely to miss some LCMs during the early period). Because the data collection effort for the early period was part of a larger effort that involved coding prices in *Shotgun News* for LCMs and numerous banned and non-banned firearms, it is also possible that coders were more likely to miss LCM ads during that period due to random factors like fatigue or time constraints.



## 8. CRIMINAL USE OF LARGE CAPACITY MAGAZINES AFTER THE BAN

Assessing trends in criminal use of LCMs is difficult. There is no national data source on crime guns equipped with LCMs (ATF national tracing data do not include information about magazines recovered with traced firearms), and, based on our contacts with numerous police departments over the course of this study and the first AW study, it seems that even those police departments that maintain electronic databases on recovered firearms do not typically record the capacity of the magazines with which the guns are equipped.<sup>75,76</sup> Indeed, we were unable to acquire sufficient data to examine LCM use for the first AW study (Roth and Koper, 1997).

For the current study, we obtained four data sources with which to investigate trends in criminal use of LCMs. Three of the databases utilized in the AW analysis – those from Baltimore, Milwaukee, and Anchorage – contained information about the magazines recovered with the guns (see the descriptions of these databases in Chapter 6). Using updated versions of these databases, we examined all LCM recoveries in Baltimore from 1993 through 2003, recoveries of LCMs in Milwaukee murder cases from 1991 to 2001, and recoveries of LCMs linked to serious crimes in Anchorage (and other parts of Alaska) from 1992 through 2002.<sup>77</sup> In addition, we studied records of guns and magazines submitted to the Jefferson Regional Forensics Lab in Louisville, Kentucky from 1996 through 2000. This lab of the Kentucky State Police services law enforcement agencies throughout roughly half of Kentucky, but most guns submitted to the lab are from the Louisville area. Guns examined at the lab are most typically those associated with serious crimes such as murders, robberies, and assaults.

The LCM analyses and findings were not as uniform across locations as were those for AWs. Therefore, we discuss each site separately. As in the AW analysis, we emphasize changes in the percentage of guns equipped with LCMs to control for overall trends in gun crime and gun recoveries. Because gun crime was falling during the latter 1990s, we anticipated that the number of guns recovered with LCMs might decline independently of the ban's impact. (Hereafter, we refer to guns equipped with LCMs as LCM guns.)

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<sup>75</sup> For the pre-ban period, one can usually infer magazine capacity based on the firearm model. For post-ban recoveries, this is more problematic because gun models capable of accepting LCMs may have been equipped with grandfathered LCMs or with post-ban magazines designed to fit the same gun but holding fewer rounds.

<sup>76</sup> As for the AW analysis in Chapter 6, we utilize police data to examine trends in criminal use of LCMs. The reader is referred to the general discussion of police gun seizure data in Chapter 6.

<sup>77</sup> Findings presented in our 2002 interim report (Koper and Roth, 2002b) indicated that LCM use had not declined as of the late 1990s. Therefore, we sought to update the LCM analyses where possible for this version of the report.

## 8.1. Baltimore

In Baltimore, about 14% of guns recovered by police were LCM guns in 1993. This figure remained relatively stable for a few years after the ban but had dropped notably by 2002 and 2003 (Figure 8-1). For the entire post-ban period (1995-2003), recoveries of LCM guns were down 8% relative to those of guns with smaller magazines (Table 8-1, panel A), a change of borderline statistical significance. Focusing on the most recent years, however, LCM gun recoveries were 24% lower in 2002 and 2003 than during the year prior to the ban, a difference that was clearly significant (Table 8-1, panel B).<sup>78,79,80</sup> This change was attributable to a 36% drop in LCM handguns (Table 8-1, panel C). LCM rifles actually increased 36% as a share of crime guns, although they still accounted for no more than 3% in 2002 and 2003 (Table 8-1, panel D).<sup>81</sup>

Yet there was no decline in recoveries of LCM guns used in violent crimes (i.e., murders, shootings, robberies, and other assaults). After the ban, the percentage of violent crime guns with LCMs generally oscillated in a range consistent with the pre-ban level (14%) and hit peaks of roughly 16% to 17% in 1996 and 2003 (Figure 8-1).<sup>82</sup> Whether comparing the pre-ban period to the entire post-ban period (1995-2003) or the most recent years (2002-2003), there was no meaningful decline in LCM recoveries linked to violent crimes (Table 8-2, panels A and B).<sup>83</sup> Neither violent uses of LCM

<sup>78</sup> Data on handgun magazines were also available for 1992. An auxiliary analysis of those data did not change the substantive inferences described in the text.

<sup>79</sup> The Maryland AP ban enacted in June 1994 also prohibited ammunition magazines holding over 20 rounds and did not permit additional sales or transfers of such magazines manufactured prior to the ban. This ban, as well as the Maryland and federal bans on AWs that account for many of the guns with magazines over 20 rounds, may have contributed to the downward trend in LCMs in Baltimore, but only 2% of the guns recovered in Baltimore from 1993 to 2000 were equipped with such magazines.

<sup>80</sup> All comparisons of 1993 to 2002-2003 in the Baltimore data are based on information from the months of January through November of each year. At the time we received these data, information was not yet available for December 2003, and preliminary analysis revealed that guns with LCMs were somewhat less likely to be recovered in December than in other months for years prior to 2003. Nevertheless, utilizing the December data for 1993 and 2002 did not change the substantive inferences. We did not remove December data from the comparisons of 1993 and the full post-ban period because those comparisons seemed less likely to be influenced by the absence of one month of data.

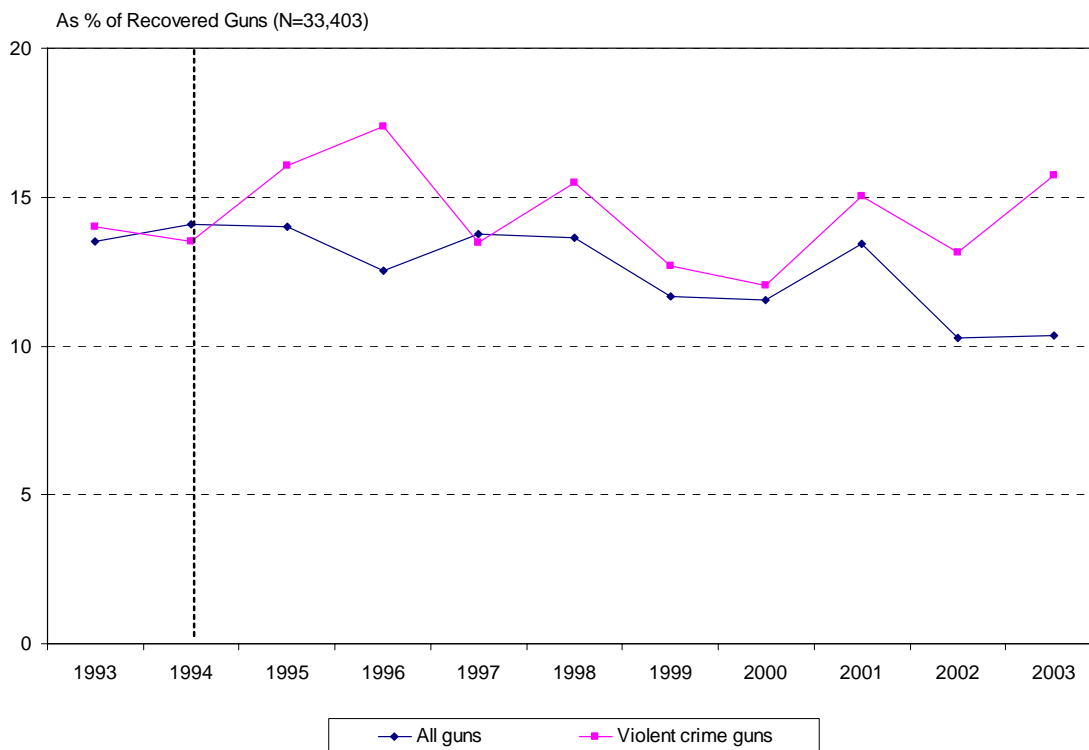
<sup>81</sup> This increase may have been due largely to a general increase in rifle seizures. LCM rifles actually dropped as a percentage of all rifle recoveries from 1993 to 2002-2003, suggesting that recoveries of LCM rifles were increasing less than recoveries of other rifles.

<sup>82</sup> For 1996, 45% of all records and 24% of those linked to violent crimes had missing data for magazine capacity (due to temporary changes in operational procedures in the Baltimore crime lab). For other years, missing data rates were no more than 6%. Based on those cases for which data were available, the share of guns with LCMs in 1996 was comparable to that in other years, particularly when examining all gun recoveries. At any rate, the analyses focusing on 1993, 2002, and 2003 reinforce the findings of those that include the 1996 data.

<sup>83</sup> The ammunition capacity code in the Baltimore data usually reflected the full capacity of the magazine and weapon, but sometimes reflected the capacity of the magazine only. (For instance, a semiautomatic with a 10-round magazine and the ability to accept one additional round in the chamber might have been coded as having a capacity of 10 or 11.) Informal assessment suggested that capacity was more likely to reflect the exact capacity of the magazine in the early years of the database and more likely to reflect the full capacity of the gun and magazine in later years. For the main runs presented in the text and tables, guns were counted as having LCMs if the coded capacity was greater than 11 rounds. This ensured that LCMs were not overestimated, but it potentially understated LCM prevalence, particularly for the earlier

handguns or LCM rifles had declined appreciably by 2002-2003 (Table 8-2, panels C and D). Hence, the general decline in LCM recoveries may reflect differences in the availability and use of LCMs among less serious offenders, changes in police practices,<sup>84</sup> or other factors.

**Figure 8-1. Police Recoveries of Guns Equipped With Large Capacity Magazines in Baltimore, 1993-2003**



years. However, coding the guns as LCM weapons based on a threshold of 10 (i.e., a coded capacity over 10 rounds) in 1993 and a threshold of 11 (i.e., a coded capacity over 11 rounds) for 2002-2003 did not change the inferences of the violent crime analysis. Further, this coding increased the pre-ban prevalence of LCMs by very little (about 4% in relative terms).

<sup>84</sup> During the late 1990s, for example, Baltimore police put greater emphasis on detecting illegal gun carrying (this statement is based on prior research and interviews the author has done in Baltimore as well as the discussion in Center to Prevent Handgun Violence, 1998). One can hypothesize that this effort reduced the fraction of recovered guns with LCMs because illegal gun carriers are probably more likely to carry smaller, more concealable handguns that are less likely to have LCMs.

**Table 8-1. Trends in All Police Recoveries of Firearms Equipped With Large Capacity Magazines, Baltimore, 1993-2003**

	<u><b>Pre-Ban Period</b></u>	<u><b>Post-Ban Period</b></u>	<u><b>Change</b></u>
<u><b>A. All LCM Guns</b></u>	Jan.-Dec. 1993	Jan. 1995-Nov. 2003	
Total	473	3703	
Annual Mean	473	445.86 <sup>a</sup>	-6%
LCM Guns as % of All Guns	13.51%	12.38%	-8% *
<u><b>B. All LCM Guns</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	430	626	
Annual Mean	430	313	-27%
LCM Guns as % of All Guns	13.47%	10.3%	-24% ***
<u><b>C. LCM Handguns</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	359	440	
Annual Mean	359	220	-39%
LCM Handguns as % of All Guns	11.25%	7.24%	-36% ***
<u><b>D. LCM Rifles</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
LCM Rifles	71	183	
Annual Mean	71	91.5	29%
LCM Rifles as % of All Guns	2.22%	3.01%	36% **

a. Annual average calculated without 1996 and 2003 (to correct for missing months or missing magazine data).

\* Chi-square p level < .10 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

\*\* Chi-square p level < .05 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

\*\*\* Chi-square p level < .01 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

**Table 8-2. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Violent Crime Cases, Baltimore, 1993-2003**

	<u><b>Pre-Ban Period</b></u>	<u><b>Post-Ban Period</b></u>	<u><b>Change <sup>a</sup></b></u>
<u><b>A. All LCM Guns</b></u>	Jan.-Dec. 1993	Jan. 1995-Nov. 2003	
Total	87	711	
Annual Mean	87	81.86 <sup>b</sup>	-6%
LCM Guns as % of All Guns	14.01%	14.44%	3%
<u><b>B. All LCM Guns</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	79	104	
Annual Mean	79	52	-34%
LCM Guns as % of All Guns	13.96%	13.65%	-2%
<u><b>C. LCM Handguns</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	62	81	
Annual Mean	62	40.5	-35%
LCM Handguns as % of All Guns	10.95%	10.63%	-3%
<u><b>D. LCM Rifles</b></u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
LCM Rifles	17	23	
Annual Mean	17	11.5	-32%
LCM Rifles as % of All Guns	3%	3.02%	1%

a. Changes in the percentages of guns with LCMs were statistically insignificant in chi-square tests.

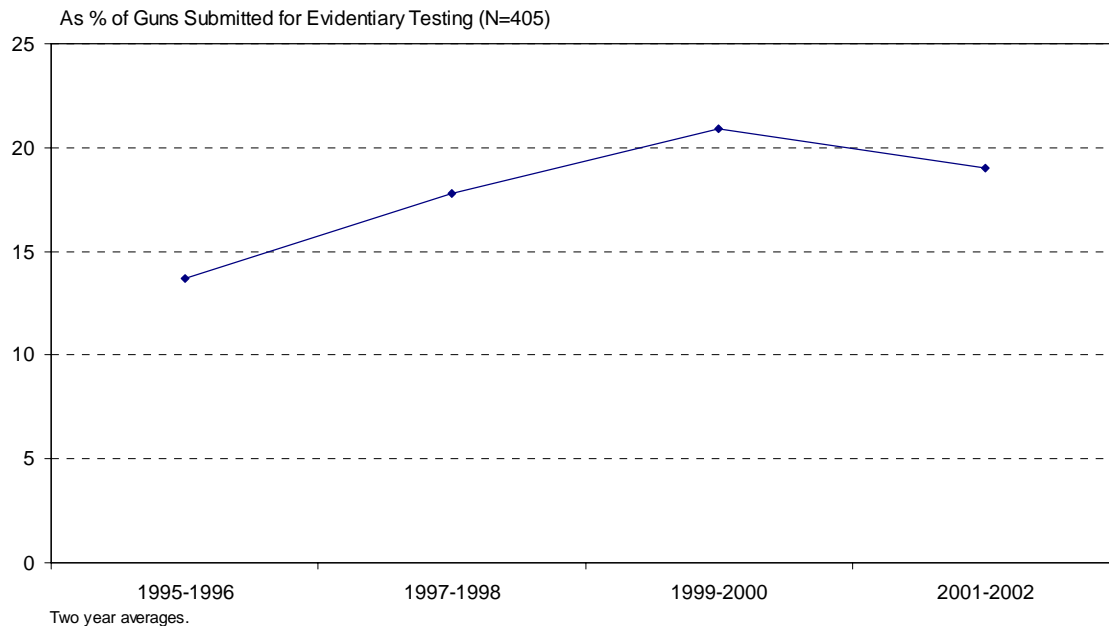
b. Annual average calculated without 1996 and 2003 (to correct for missing months or missing magazine data).

## 8.2. Anchorage

In the Alaska database, magazine capacity was recorded only for guns recovered during the post-ban years, 1995 through 2002. However, we estimated pre-ban use of LCM handguns by identifying handgun models inspected during 1992 and 1993 that were manufactured with LCMs prior to the ban.<sup>85</sup> This permitted an assessment of pre-post changes in the use of LCM handguns.

As shown in Figure 8-2 (also see Table 8-3, panel A), LCM guns rose from 14.5% of crime guns in 1995-1996 to 24% in 2000-2001 (we present two-year averages because the sample are relatively small, particularly for the most recent years) and averaged about 20% for the entire post-ban period. LCM handguns drove much of this trend, but LCM rifles also increased from about 3% of crime guns in 1995-96 to 11% in 2000-2001.

**Figure 8-2. Police Recoveries of Guns Equipped With Large Capacity Magazines in Anchorage (Alaska), 1995-2002**



<sup>85</sup> To make these determinations, we consulted gun catalogs such as the *Blue Book of Gun Values* and *Guns Illustrated*.

**Table 8-3. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Violent Crime Cases, Anchorage (Alaska), 1992-2002 <sup>a</sup>**

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change <sup>b</sup></u>
<b><u>A. All LCM Guns</u></b>	N/A	Jan. 1995-Dec. 2002	
Total		80	
Annual Mean		10	N/A
LCM Guns as % of All Guns		19.75%	N/A
<b><u>B. LCM Handguns</u></b>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2002	
Total	17	57	
Annual Mean	8.5	7.13	-16%
LCM Handguns as % All Handguns	26.15%	22.35%	-15%
<b><u>C. LCM Handguns</u></b>	Jan. 1992-Dec. 1993	Jan. 2001-Dec. 2002	
Total	17	10	
Annual Mean	8.5	5	-41%
LCM Handguns as % of All Handguns	26.15%	19.23%	-26%

a. Based on guns submitted to State Police for evidentiary testing.

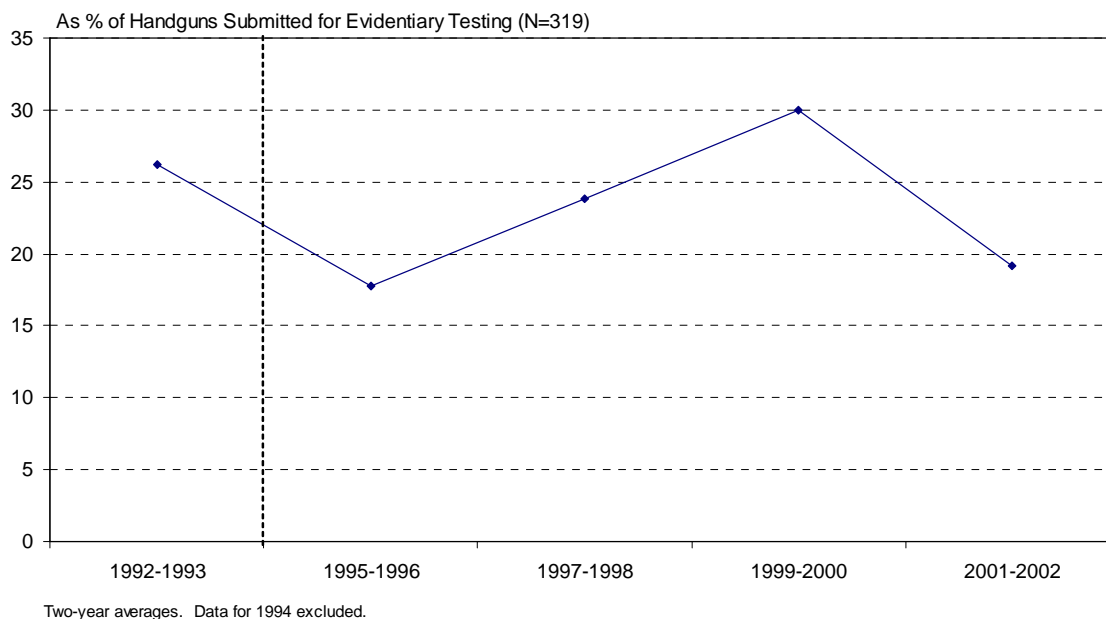
b. Changes in the percentages of guns equipped with LCMs were statistically insignificant in chi-square tests.

Investigation of pre-post changes for handguns revealed an inconsistent pattern (Figure 8-3). LCM handguns dropped initially after the ban, declining from 26% of handguns in 1992-1993 to 18% in 1995-1996. However, they rebounded after 1996, reaching a peak of 30% of handguns in 1999-2000 before declining to 19% in 2001-2002.

For the entire post-ban period, the share of handguns with LCMs was about 15% lower than in the pre-ban period (Table 8-3, panel B). By the two most recent post-ban years (2001-2002), LCM use had dropped 26% from the pre-ban years (Table 8-3, panel C). These changes were not statistically significant, but the samples of LCM handguns were rather small for rigorous statistical testing. Even so, it seems premature to conclude

that there has been a lasting reduction in LCM use in Alaska. LCM use in 2001-2002 was somewhat higher than that immediately following the ban in 1995-1996, after which there was a substantial rebound. Considering the inconsistency of post-ban patterns, further follow-up seems warranted before making definitive conclusions about LCM use in Alaska.

**Figure 8-3. Police Recoveries of Handguns Equipped With Large Capacity Magazines in Anchorage (Alaska), 1992-2002**



### 8.3. Milwaukee

LCM guns accounted for 21% of guns recovered in Milwaukee murder investigations from 1991 to 1993 (Table 8-4, panel A). Following the ban, this figure rose until reaching a plateau of over 36% in 1997 and 1998 (Figure 8-4). On average, the share of guns with LCMs grew 55% from 1991-1993 to 1995-1998, a trend that was driven by LCM handguns (Table 8-4, panels A and B).<sup>86</sup> LCM rifles held steady at between 4% and 5% of the guns (Table 8-4, panel C).

We also analyzed a preliminary database on 48 guns used in murders during 2000 and 2001 (unlike the 1991-1998 database, this database did not include information on other guns recovered during the murder investigations). About 11% of these guns were LCM guns, as compared to 19% of guns used in murders from 1991 to 1993 (analyses not shown). However, nearly a quarter of the 2000-2001 records were missing information on magazine capacity.<sup>87</sup> Examination of the types and models of guns with

<sup>86</sup> LCM guns also increased as share of guns that were used in the murders (the full sample results discussed in the text include all guns recovered during the investigations).

<sup>87</sup> Magazine capacity was missing for less than 4% of the records in earlier years.



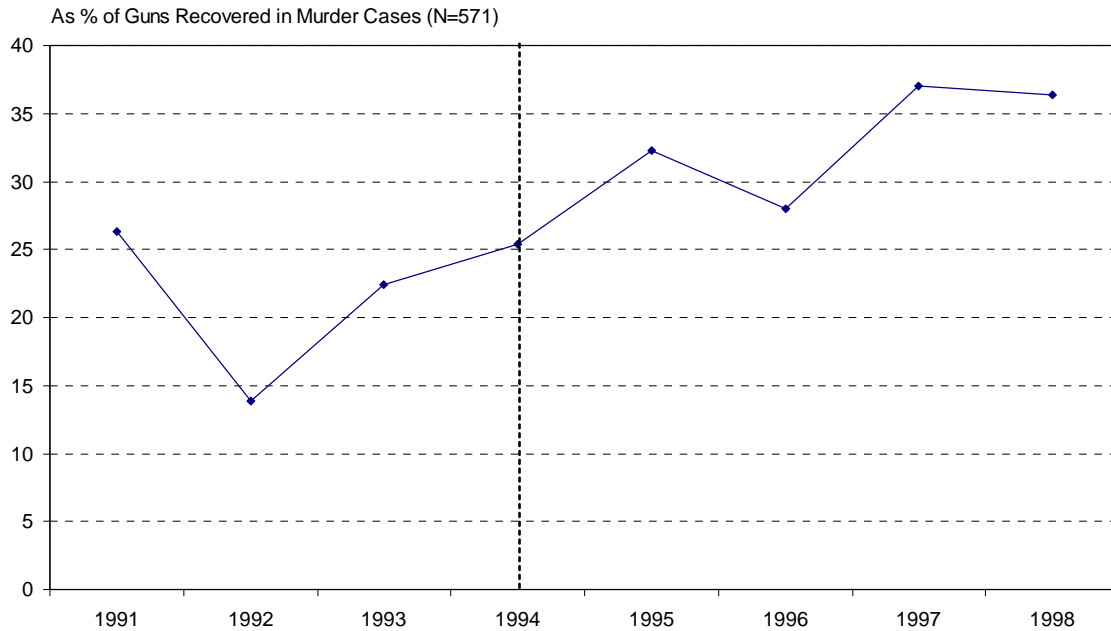
unidentified magazines suggested that as many as 17% of guns used in murders during 2000 and 2001 may have been LCM guns (based on all those that either had LCMs, were models sold with LCMs prior to the ban, or were unidentified semiautomatics). While this still suggests a drop in LCM use from the peak levels of the late 1990s (26% of guns used in murders from 1995 to 1998 had LCMs), it is not clear that LCM use has declined significantly below pre-ban levels.

**Table 8-4. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Murder Cases, Milwaukee County, 1991-1998**

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
<b><u>A. All LCM Guns</u></b>			
Total	51	83	
Annual Mean	17	20.75	22%
LCM Guns as % of All Guns	20.9%	32.42%	55%*
<b><u>B. LCM Handguns</u></b>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
Total	40	71	
Annual Mean	13.33	17.75	33%
LCM Handguns as % of All Guns	16.39%	27.73%	69%*
<b><u>C. LCM Rifles</u></b>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
Total	11	12	
Annual Mean	3.67	3	-18%
LCM Rifles as % of All Guns	4.51%	4.69%	4%

\* Chi-square p level < .01 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

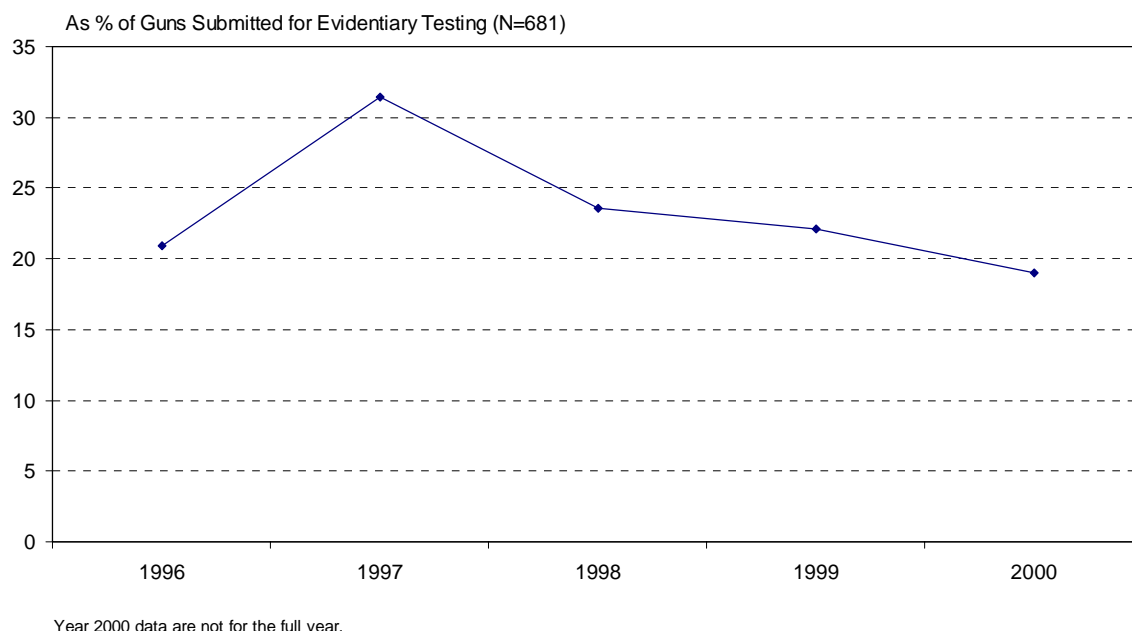
**Figure 8-4. Recoveries of Guns Equipped With Large Capacity Magazines in Milwaukee County Murder Cases, 1991-1998**



#### 8.4. Louisville

The Louisville LCM data are all post-ban (1996-2000), so we cannot make pre-post comparisons. Nonetheless, the share of crime guns with LCMs in Louisville (24%) was within the range of that observed in the other cities during this period. And similar to post-ban trends in the other sites, LCM recoveries peaked in 1997 before leveling off and remaining steady through the year 2000 (Figure 8-5). LCM rifles dropped 21% as a share of crime guns between 1996 and 2000 (analyses not shown), but there were few in the database, and they never accounted for more than 6.2% of guns in any year.

**Figure 8-5. Police Recoveries of Guns Equipped With Large Capacity Magazines in Louisville (Kentucky), 1996-2000**



## 8.5. Summary

Despite a doubling of handgun LCM prices between 1993 and 1995 and a 40% increase in rifle LCM prices from 1993 to 1994, criminal use of LCMs was rising or steady through at least the latter 1990s, based on police recovery data from four jurisdictions studied in this chapter. These findings are also consistent with an earlier study finding no decline in seizures of LCM guns from juveniles in Washington, DC in the year after the ban (Koper, 2001).<sup>88</sup> Post-2000 data, though more limited and inconsistent, suggest that LCM use may be dropping from peak levels of the late 1990s but provide no definitive evidence of a drop below pre-ban levels.<sup>89</sup> These trends have been driven primarily by LCM handguns, which are used in crime roughly three times as

<sup>88</sup> From 1991 to 1993, 16.4% of guns recovered from juveniles in Washington, DC had LCMs (14.2% had LCMs in 1993). In 1995, this percentage increased to 17.1%. We did not present these findings in this chapter because the data were limited to guns recovered from juveniles, the post-ban data series was very short, and the gun markets supplying DC and Baltimore are likely to have much overlap (Maryland is a leading supplier of guns to DC – see ATF, 1997; 1999).

<sup>89</sup> We reran selected key analyses with the Baltimore, Milwaukee, and Louisville data after excluding .22 caliber guns, some of which could have been equipped with attached tubular magazines that are exempted from the LCM ban, and obtained results consistent with those reported in the text. It was possible to identify these exempted magazines in the Anchorage data. When they were removed from Anchorage's LCM count, the general pattern in use of banned LCMs was similar to that presented in the main 1995-2002 analysis: guns with banned LCMs rose, reaching a peak of 21% of crime guns in 1999-2000, before declining slightly to 19% in 2001-2002.

often as LCM rifles. Nonetheless, there has been no consistent reduction in the use of LCM rifles either.

The observed patterns are likely due to several factors: a hangover from pre-ban growth in the production and marketing of LCM guns (Cook and Ludwig, 1997, pp. 5-6; Wintemute, 1996);<sup>90</sup> the low cost of LCMs relative to the firearms they complement, which seems to make LCM use less sensitive to prices than is firearm use;<sup>91</sup> the utility that gun users, particularly handgun users, attach to LCMs; a plentiful supply of grandfathered LCMs, likely enhanced by a pre-ban surge in production (though this has not been documented) and the importation of millions of foreign LCMs since the ban;<sup>92</sup> thefts of LCM firearms (see Roth and Koper, 1997, Chapter 4); or some combination of these factors.<sup>93</sup> However, it is worth noting that our analysis did not reveal an upswing in use of LCM guns following the surge of LCM importation in 1999 (see the previous chapter). It remains to be seen whether recent imports will have a demonstrable effect on patterns of LCM use.

Finally, we must be cautious in generalizing these results to the nation because they are based on a small number of non-randomly selected jurisdictions. Nonetheless, the consistent failure to find clear evidence of a pre-post drop in LCM use across these geographically diverse locations strengthens the inference that the findings are indicative of a national pattern.

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<sup>90</sup> To illustrate this trend, 38% of handguns acquired by gun owners during 1993 and 1994 were equipped with magazines holding 10 or more rounds, whereas only 14% of handguns acquired before 1993 were so equipped (Cook and Ludwig, 1997, pp. 5-6).

<sup>91</sup> Although elevated post-ban prices did not suppress use of LCMs, a more subtle point is that LCM use rose in most of these locations between 1995 and 1998, as LCM prices were falling from their peak levels of 1994-1995. Therefore, LCM use may have some sensitivity to price trends.

<sup>92</sup> However, we do not have the necessary data to determine if LCMs used in crime after the ban were acquired before or after the ban.

<sup>93</sup> In light of these considerations, it is conceivable that the ban slowed the rate of growth in LCM use, accelerated it temporarily (due to a pre-ban production boom), or had no effect. We do not have the data necessary to examine this issue rigorously. Moreover, the issue might be regarded as somewhat superfluous; the more critical point would seem to be that nearly a decade after the ban, LCM use has still not declined demonstrably below pre-ban levels.

## **9. THE CONSEQUENCES OF CRIMES WITH ASSAULT WEAPONS AND LARGE CAPACITY MAGAZINES**

One of the primary considerations motivating passage of the ban on AWs and LCMs was a concern over the perceived dangerousness of these guns and magazines. In principal, semiautomatic weapons with LCMs enable offenders to fire high numbers of shots rapidly, thereby potentially increasing both the number of person wounded per gunfire incident (including both intended targets and innocent bystanders) and the number of gunshot victims suffering multiple wounds, both of which would increase deaths and injuries from gun violence. Ban advocates also argued that the banned AWs possessed additional features conducive to criminal applications.

The findings of the previous chapters suggest that it is premature to make definitive assessments of the ban's impact on gun violence. Although criminal use of AWs has declined since the ban, this reduction was offset through at least the late 1990s by steady or rising use of other guns equipped with LCMs. As argued previously, the LCM ban has greater potential for reducing gun deaths and injuries than does the AW ban. Guns with LCMs – of which AWs are only a subset – were used in up to 25% of gun crimes before the ban, whereas AWs were used in no more than 8% (Chapter 3). Furthermore, an LCM is arguably the most important feature of an AW. Hence, use of guns with LCMs is probably more consequential than use of guns with other military-style features, such as flash hiders, folding rifle stocks, threaded barrels for attaching a silencers, and so on.<sup>94</sup>

This is not to say that reducing use of AWs will have no effect on gun crime; a decline in the use of AWs does imply fewer crimes with guns having particularly large magazines (20 or more rounds) and other military-style features that could facilitate some crimes. However, it seems that any such effects would be outweighed, or at least

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<sup>94</sup> While it is conceivable that changing features of AWs other than their magazines might prevent some gunshot victimizations, available data provide little if any empirical basis for judging the likely size of such effects. Speculatively, some of the most beneficial weapon redesigns may be the removal of folding stocks and pistol grips from rifles. It is plausible that some offenders who cannot obtain rifles with folding stocks (which make the guns more concealable) might switch to handguns, which are more concealable but generally cause less severe wounds (e.g. see DiMaio, 1985). However, such substitution patterns cannot be predicted with certainty. Police gun databases rarely have information sufficiently detailed to make assessments of changes over time in the use of weapons with specific features like folding stocks. Based on informal assessments, there was no consistent pattern in post-ban use of rifles (as a share of crime guns) in the local databases examined in the prior chapters (also see the specific comments on LCM rifles in the previous chapters).

Pistol grips enhance the ability of shooters to maintain control of a rifle during rapid, “spray and pray” firing (e.g., see Violence Policy Center, 2003). (Heat shrouds and forward handgrips on APs serve the same function.) While this feature may prove useful in military contexts (e.g., firefights among groups at 100 meters or less – see data of the U.S. Army's Operations Research Office as cited in Violence Policy Center, 2003), it is unknown whether civilian attacks with semiautomatic rifles having pistol grips claim more victims per attack than do those with other semiautomatic rifles. At any rate, most post-ban AR-type rifles still have pistol grips. Further, the ban does not count a stock thumbhole grip, which serves the same function as a pistol grip (e.g., see the illustration of LCMM rifles in Chapter 2), as an AR feature.

obscured, by the wider effects of LCM use, which themselves are likely to be small at best, as we argue below.<sup>95</sup>

Because offenders can substitute non-banned guns and small magazines for banned AWs and LCMs, there is not a clear rationale for expecting the ban to reduce assaults and robberies with guns.<sup>96</sup> But by forcing AW and LCM offenders to substitute non-AWs with small magazines, the ban might reduce the number of shots fired per gun attack, thereby reducing both victims shot per gunfire incident and gunshot victims sustaining multiple wounds. In the following sections, we consider the evidence linking high-capacity semiautomatics and AWs to gun violence and briefly examine recent trends in lethal and injurious gun violence.

### **9.1. The Spread of Semiautomatic Weaponry and Trends in Lethal and Injurious Gun Violence Prior to the Ban**

Nationally, semiautomatic handguns grew from 28% of handgun production in 1973 to 80% in 1993 (Zawitz, 1995, p. 3). Most of this growth occurred from the late 1980s onward, during which time the gun industry also increased marketing and production of semiautomatics with LCMs (Wintemute, 1996). Likewise, semiautomatics grew as a percentage of crime guns (Koper, 1995; 1997), implying an increase in the average firing rate and ammunition capacity of guns used in crime.<sup>97</sup>

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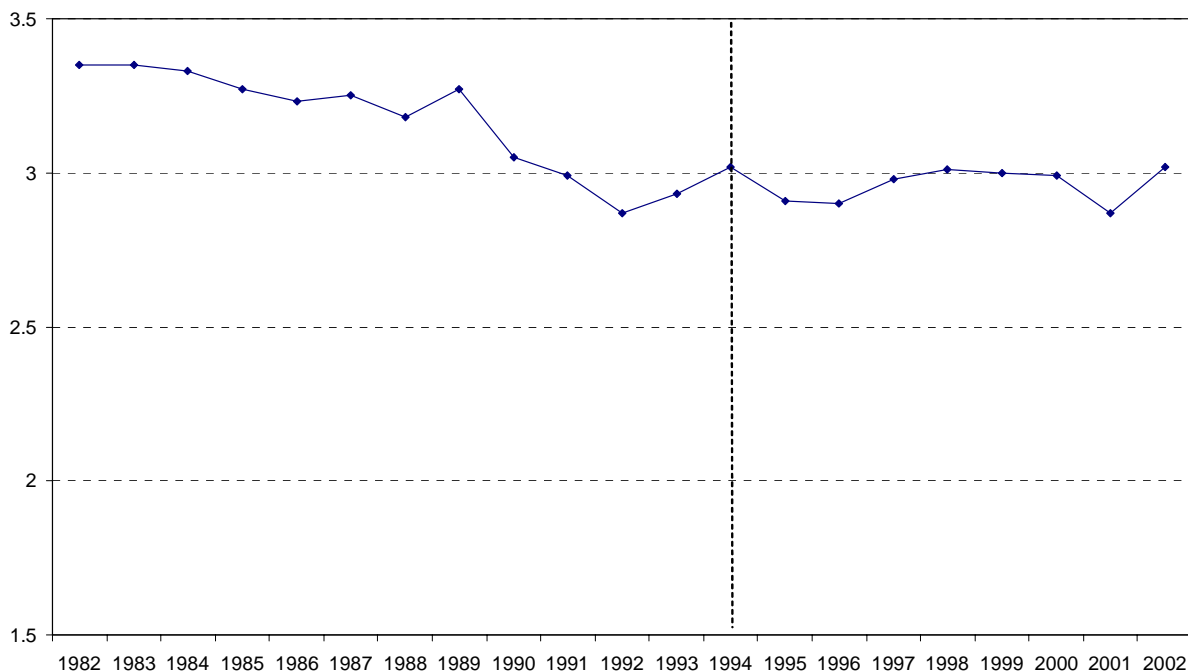
<sup>95</sup> On a related note, a few studies suggest that state-level AW bans have not reduced crime (Koper and Roth, 2001a; Lott, 2003). This could be construed as evidence that the federal AW ban will not reduce gunshot victimizations without reducing LCM use because the state bans tested in those studies, as written at the time, either lacked LCM bans or had LCM provisions that were less restrictive than that of the federal ban. (New Jersey's 1990 AW ban prohibited magazines holding more than 15 rounds. AP bans passed by Maryland and Hawaii prohibited magazines holding more than 20 rounds and pistol magazines holding more than 10 rounds, respectively, but these provisions did not take effect until just a few months prior to the federal ban.) However, it is hard to draw definitive conclusions from these studies for a number of reasons, perhaps the most salient of which are the following: there is little evidence on how state AW bans affect the availability and use of AWs (the impact of these laws is likely undermined to some degree by the influx of AWs from other states, a problem that was probably more pronounced prior to the federal ban when the state laws were most relevant); studies have not always examined the effects of these laws on gun homicides and shootings, the crimes that are arguably most likely to be affected by AW bans (see discussion in the main text); and the state AW bans that were passed prior to the federal ban (those in California, New Jersey, Hawaii, Connecticut, and Maryland) were in effect for only three months to five years (two years or less in most cases) before the imposition of the federal ban, after which they became largely redundant with the federal legislation and their effects more difficult to predict and estimate.

<sup>96</sup> One might hypothesize that the firepower provided by AWs and other semiautomatics with LCMs emboldens some offenders to engage in aggressive behaviors that prompt more shooting incidents. On the other hand, these weapons might also prevent some acts of violence by intimidating adversaries, thus discouraging attacks or resistance. We suspect that firepower does influence perceptions, considering that many police departments have upgraded their weaponry in recent years – often adopting semiautomatics with LCMs – because their officers felt outgunned by offenders. However, hypotheses about gun types and offender behavior are very speculative, and, pending additional research on such issues, it seems prudent to focus on indicators with stronger theoretical and empirical foundations.

<sup>97</sup> Revolvers, the most common type of non-semiautomatic handgun, typically hold only 5 or 6 rounds (and sometimes up to 9). Semiautomatic pistols, in contrast, hold ammunition in detachable magazines that, prior to the ban, typically held 5 to 17 bullets and sometimes upwards of 30 (Murtz et al., 1994).

The impact of this trend is debatable. Although the gun homicide rate rose considerably during the late 1980s and early 1990s (Bureau of Justice Statistics, 1994, p. 13), the percentage of violent gun crimes resulting in death was declining (see Figure 9-1 and the related discussion in section 9.3). Similarly, the percentage of victims killed or wounded in handgun discharge incidents declined from 27% during the 1979-1987 period to 25% for the 1987-1992 period (calculated from Rand, 1990, p. 5; 1994, p. 2) as semiautomatics were becoming more common crime weapons.<sup>98</sup> On the other hand, an increasing percentage of gunshot victims died from 1992 to 1995 according to hospital data (Cherry et al., 1998), a trend that could have been caused in part by a higher number of gunshot victims with multiple wounds (also see McGonigal et al., 1993). Most notably, the case fatality rate for assaultive gunshot cases involving 15 to 24-year-old males rose from 15.9% in late 1993 to 17.5% in early 1995 (p. 56).

**Figure 9-1. Percentage of Violent Gun Crimes Resulting in Death (National), 1982-2002**



Based on gun homicides, gun robberies, and gun assaults reported in the Uniform Crime Reports and Supplemental Homicide Reports.

<sup>98</sup> A related point is that there was a general upward trend in the average number of shots fired by offenders in gunfights with New York City police from the late 1980s through 1992 (calculated from Goehl, 1993, p. 51). However, the average was no higher during this time than during many years of the early 1980s and 1970s.



Some researchers have inferred links between the growing use of semiautomatics in crime and the rise of both gun homicides and bystander shootings in a number of cities during the late 1980s and early 1990s (Block and Block, 1993; McGonigal et al., 1993; Sherman et al., 1989; Webster et al., 1992). A study in Washington, DC, for example, reported increases in wounds per gunshot victim and gunshot patient mortality during the 1980s that coincided with a reported increase in the percentage of crime guns that were semiautomatics (Webster et al., 1992).

Nevertheless, changes in offender behavior, coupled with other changes in crime guns (e.g., growing use of large caliber handguns – see Caruso et al., 1999; Koper, 1995; 1997; Wintemute, 1996), may have been key factors driving such trends. Washington, DC, for example, was experiencing an exploding crack epidemic at the time of the aforementioned study, and this may have raised the percentage of gun attacks in which offenders had a clear intention to injure or kill their victims. Moreover, studies that attempted to make more explicit links between the use of semiautomatic firearms and trends in lethal gun violence via time series analysis failed to produce convincing evidence of such links (Koper, 1995; 1997). However, none of the preceding research related specific trends in the use of AWs or LCMs to trends in lethal gun violence.

## **9.2. Shots Fired in Gun Attacks and the Effects of Weaponry on Attack Outcomes**

The evidence most directly relevant to the potential of the AW-LCM ban to reduce gun deaths and injuries comes from studies examining shots fired in gun attacks and/or the outcomes of attacks involving different types of guns. Unfortunately, such evidence is very sparse.

As a general point, the faster firing rate and larger ammunition capacities of semiautomatics, especially those equipped with LCMs, have the potential to affect the outcomes of many gun attacks because gun offenders are not particularly good shooters. Offenders wounded their victims in no more than 29% of gunfire incidents according to national, pre-ban estimates (computed from Rand, 1994, p. 2; also see estimates presented later in this chapter). Similarly, a study of handgun assaults in one city revealed a 31% hit rate per shot, based on the sum totals of all shots fired and wounds inflicted (Reedy and Koper, 2003, p. 154). Other studies have yielded hit rates per shot ranging from 8% in gunfights with police (Goehl, 1993, p. 8) to 50% in mass murders (Kleck, 1997, p. 144). Even police officers, who are presumably certified and regularly re-certified as proficient marksman and who are almost certainly better shooters than are average gun offenders, hit their targets with only 22% to 39% of their shots (Kleck, 1991, p. 163; Goehl, 1993). Therefore, the ability to deliver more shots rapidly should raise the likelihood that offenders hit their targets, not to mention innocent bystanders.<sup>99</sup>

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<sup>99</sup> However, some argue that this capability is offset to some degree by the effects of recoil on shooter aim, the limited number of shots fired in most criminal attacks (see below), and the fact that criminals using non-semiautomatics or semiautomatics with small magazines usually have the time and ability to deliver multiple shots if desired (Kleck, 1991, pp. 78-79).



A few studies have compared attacks with semiautomatics, sometimes specifically those with LCMs (including AWs), to other gun assaults in terms of shots fired, persons hit, and wounds inflicted (see Tables 9-1 and 9-2). The most comprehensive of these studies examined police reports of attacks with semiautomatic pistols and revolvers in Jersey City, New Jersey from 1992 through 1996 (Reedy and Koper, 2003), finding that use of pistols resulted in more shots fired and higher numbers of gunshot victims (Table 9-1), though not more gunshot wounds per victim (Table 9-2).<sup>100</sup> Results implied there would have been 9.4% fewer gunshot victims overall had semiautomatics not been used in any of the attacks. Similarly, studies of gun murders in Philadelphia (see McGonigal et al., 1993 in Table 9-1) and a number of smaller cities in Pennsylvania, Ohio, and Iowa (see Richmond et al., 2003 in Table 9-2) found that attacks with semiautomatics resulted in more shots fired and gunshot wounds per victim. An exception is that the differential in shots fired between pistol and revolver cases in Philadelphia during 1990 did not exist for cases that occurred in 1985, when semiautomatics and revolvers had been fired an average of 1.6 and 1.9 times, respectively. It is not clear whether the increase in shots fired for pistol cases from 1985 to 1990 was due to changes in offender behavior, changes in the design or quality of pistols (especially an increase in the use of models with LCMs – see Wintemute, 1996), the larger sample for 1990, or other factors.

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<sup>100</sup> But unlike other studies that have examined wounds per victim (see Table 9-2), this study relied on police reports of wounds inflicted rather than medical reports, which are likely to be more accurate.

**Table 9-1. Shots Fired and Victims Hit in Gunfire Attacks By Type of Gun and Magazine**

<b>Data Source</b>	<b>Measure</b>	<b>Outcome</b>
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 <sup>a</sup>	Shots Fired	Avg. = 3.2 – 3.7 (n=165 pistol cases) * Avg. = 2.3 – 2.6 (n=71 revolver cases) *
Gun homicides with semiautomatic pistols and revolvers, Philadelphia, 1985 and 1990 <sup>b</sup>	Shots Fired	Avg. = 1.6 (n=21 pistol cases, 1985) Avg. = 1.9 (n=57 revolver cases, 1985) Avg. = 2.7 (n=95 pistol cases, 1990) Avg. = 2.1 (n=108 revolver cases, 1990)
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 <sup>a</sup>	Victims Hit	Avg. = 1.15 (n=95 pistol cases) * Avg. = 1.0 (n=40 revolver cases) *
Mass shootings with AWs, semiautomatics having LCMs, or other guns, 6+ dead or 12+ shot, United States, 1984-1993 <sup>c</sup>	Victims Hit	Avg. = 29 (n=6 AW/LCM cases) Avg. = 13 (n=9 non-AW/LCM cases)
Self-reported gunfire attacks by state prisoners with AWs, other semiautomatics, and non-semiautomatic firearms, United States, 1997 or earlier <sup>d</sup>	% of Attacks With Victims Hit	19.5% (n=72 AW or machine gun cases) 22.3% (n=419 non-AW, semiautomatic cases) 23.3% (n=608 non-AW, non-semiautomatic cases)

a. Reedy and Koper (2003)

b. McGonigal et al. (1993)

c. Figures calculated by Koper and Roth (2001a) based on data presented by Kleck (1997, p. 144)

d. Calculated from Harlow (2001, p. 11). (Sample sizes are based on unpublished information provided by the author of the survey report.)

\* Pistol/revolver differences statistically significant at  $p < .05$  (only Reedy and Koper [2003] and Harlow [2001] tested for statistically significant differences). The shots fired ranges in Reedy and Koper are based on minimum and maximum estimates.

**Table 9-2. Gunshot Wounds Per Victim By Type of Gun and Magazine**

<b>Data Source</b>	<b>Measure</b>	<b>Outcome</b>
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 <sup>a</sup>	Gunshot Wounds	Avg. = 1.4 (n=107 pistol victims) Avg. = 1.5 (n=40 revolver victims)
Gun homicides with semiautomatic pistols and revolvers, Iowa City (IA), Youngstown (OH), and Bethlehem (PA), 1994-1998 <sup>b</sup>	Gunshot Wounds	Avg. = 4.5 total (n=212 pistol victims)* Avg. = 2.9 entry  Avg. = 2.0 total (n=63 revolver victims)* Avg. = 1.5 entry
Gun homicides with assault weapons (AWs), guns having large capacity magazines (LCMs), and other firearms, Milwaukee, 1992-1995 <sup>c</sup>	Gunshot Wounds	Avg. = 3.23 (n=30 LCM victims) ** Avg. = 3.14 (n=7 AW victims)  Avg. = 2.08 (n=102 non-AW/LCM victims)**

a. Reedy and Koper (2003)

b. Richmond et al. (2003)

c. Roth and Koper (1997, Chapter 6)

\* Pistol/revolver differences statistically significant at  $p < .01$ .

\*\* The basic comparison between LCM victims and non-AW/LCM victims was moderately significant ( $p < .10$ ) with a one-tailed test. Regression results (with a slightly modified sample) revealed a difference significant at  $p = .05$  (two-tailed test). Note that the non-LCM group included a few cases involving non-banned LCMs (.22 caliber attached tubular devices).

Also, a national survey of state prisoners found that, contrary to expectations, offenders who reported firing on victims with AWs and other semiautomatics were no more likely to report having killed or injured victims than were other gun offenders who reported firing on victims (Table 9-1). However, the measurement of guns used and attack outcomes were arguably less precise in this study, which was based on offender self-reports, than in other studies utilizing police and medical reports.<sup>101</sup>

Attacks with AWs or other guns with LCMs may be particularly lethal and injurious, based on very limited evidence. In mass shooting incidents (defined as those in which at least 6 persons were killed or at least 12 were wounded) that occurred during the decade preceding the ban, offenders using AWs and other semiautomatics with LCMs (sometimes in addition to other guns) claimed an average of 29 victims in comparison to an average of 13 victims for other cases (Table 9-1). (But also see the study discussed in the preceding paragraph in regards to victims hit in AW cases.)

Further, a study of Milwaukee homicide victims from 1992 through 1995 revealed that those killed with AWs were shot 3.14 times on average, while those killed with any

<sup>101</sup> See the discussion of self-reports and AW use in Chapter 3.

gun having an LCM were shot 3.23 times on average (Table 9-2). In contrast, victims shot with guns having small magazines had only 2.1 wounds on average. If such a wound differential can be generalized to other gun attacks – if, that is, both fatal and non-fatal LCM gunshot victims are generally hit one or more extra times – then LCM use could have a considerable effect on the number of gunshot victims who die. To illustrate, the fatality rate among gunshot victims in Jersey City during the 1990s was 63% higher for those shot twice than for those shot once (26% to 16%) (Koper and Roth, 2001a; 2001b). Likewise, fatality rates are 61% higher for patients with multiple chest wounds than for patients with a single chest wound (49% to 30.5%), based on a Washington, DC study (Webster et al., 1992, p. 696).

Similar conclusions can also be inferred indirectly from the types of crimes involving LCM guns. To illustrate, handguns associated with gunshot victimizations in Baltimore (see the description of the Baltimore gun and magazine data in the preceding chapter) are 20% to 50% more likely to have LCMs than are handguns associated with other violent crimes, controlling for weapon caliber (Table 9-3). This difference may be due to higher numbers of shots and hits in crimes committed with LCMs, although it is also possible that offenders using LCMs are more likely to fire on victims. But controlling for gunfire, guns used in shootings are 17% to 26% more likely to have LCMs than guns used in gunfire cases resulting in no wounded victims (perhaps reflecting higher numbers of shots fired and victims hit in LCM cases), and guns linked to murders are 8% to 17% more likely to have LCMs than guns linked to non-fatal gunshot victimizations (perhaps indicating higher numbers of shots fired and wounds per victim in LCM cases).<sup>102</sup> These differences are not all statistically significant, but the pattern is consistent. And as discussed in Chapter 3, AWs account for a larger share of guns used in mass murders and murders of police, crimes for which weapons with greater firepower would seem particularly useful.

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<sup>102</sup> Cases with and without gunfire and gunshot victims were approximated based on offense codes contained in the gun seizure data (some gunfire cases not resulting in wounded victims may not have been identified as such, and it is possible that some homicides were not committed with the guns recovered during the investigations). In order to control for caliber effects, we focused on 9mm and .38 caliber handguns. Over 80% of the LCM handguns linked to violent crimes were 9mm handguns. Since all (or virtually all) 9mm handguns are semiautomatics, we also selected .38 caliber guns, which are close to 9mm in size and consist almost entirely of revolvers and derringers.

The disproportionate involvement of LCM handguns in injury and death cases is greatest in the comparisons including both 9mm and .38 caliber handguns. This may reflect a greater differential in average ammunition capacity between LCM handguns and revolvers/derringers than between LCM handguns and other semiautomatics. The differential in fatal and non-fatal gunshot victims may also be due to caliber effects; 9mm is generally a more powerful caliber than .38 based on measures like kinetic energy or relative stopping power (e.g., see DiMaio, 1985, p. 140; Warner 1995, p. 223; Wintemute, 1996, p. 1751).

**Table 9-3. Probabilities That Handguns Associated With Murders, Non-Fatal Shootings, and Other Violent Crimes Were Equipped With Large Capacity Magazines in Baltimore, 1993-2000**

<b><u>Handgun Sample</u></b>	<b><u>% With LCM</u></b>	<b><u>% Difference (#2 Relative to #1)</u></b>
<b>A. Handguns Used in Violent Crimes With and Without Gunshot Injury</b>		
1) 9mm and .38: violence, no gunshot victims	23.21%	
2) 9mm and .38: violence with gunshot victims	34.87%	50% *
1) 9mm: violence, no gunshot victims	52.92%	
2) 9mm: violence with gunshot victims	63.24%	20% *
<b>B. Handguns Used in Gunfire Cases With and Without Gunshot Injury</b>		
1) 9mm and .38: gunfire, no gunshot victims	27.66%	
2) 9mm and .38: gunfire with gunshot victims	34.87%	26%
1) 9mm: gunfire, no gunshot victims	54.17%	
2) 9mm: gunfire with gunshot victims	63.24%	17%
<b>C. Handguns Used in Fatal Versus Non-Fatal Gunshot Victimizations</b>		
1) 9mm and .38: non-fatal gunshot victims	32.58%	
2) 9mm and .38: homicides	38.18%	17%
1) 9mm: non-fatal gunshot victims	61.14%	
2) 9mm: homicides	66.04%	8%

\* Statistically significant difference at  $p < .01$  (chi-square).

The findings of the preceding studies are subject to numerous caveats. There were few if any attempts to control for characteristics of the actors or situations that might have influenced weapon choices and/or attack outcomes.<sup>103</sup> Weapons data were typically missing for substantial percentages of cases. Further, many of the comparisons in the tables were not tested for statistical significance (see the notes to Tables 9-1 and 9-2).<sup>104</sup>

Tentatively, nonetheless, the evidence suggests more often than not that attacks with semiautomatics, particularly those equipped with LCMs, result in more shots fired, leading to both more injuries and injuries of greater severity. Perhaps the faster firing rate and larger ammunition capacities afforded by these weapons prompt some offenders to fire more frequently (i.e., encouraging what some police and military persons refer to as a “spray and pray” mentality). But this still begs the question of whether a 10-round limit on magazine capacity will affect the outcomes of enough gun attacks to measurably reduce gun injuries and deaths.

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<sup>103</sup> In terms of offender characteristics, recall from Chapter 3 that AP buyers are more likely than other gun buyers to have criminal histories and commit subsequent crimes. This does not seem to apply, however, to the broader class of semiautomatic users: handgun buyers with and without criminal histories tend to buy pistols in virtually the same proportions (Wintemute et al., 1998b), and youthful gun offenders using pistols and revolvers have very comparable criminal histories (Sheley and Wright, 1993b, p. 381). Further, semiautomatic users, including many of those using AWs, show no greater propensity to shoot at victims than do other gun offenders (Harlow, 2001, p. 11; Reedy and Koper, 2003). Other potential confounders to the comparisons in Tables 9-1 and 9-2 might include shooter age and skill, the nature of the circumstances (e.g., whether the shooting was an execution-style shooting), the health of the victim(s), the type of location (e.g., indoor or outdoor location), the distance between the shooter and intended victim(s), the presence of multiple persons who could have been shot intentionally or accidentally (as bystanders), and (in the mass shooting incidents) the use of multiple firearms.

<sup>104</sup> Tables 9-1 and 9-2 present the strongest evidence from the available studies. However, there are additional findings from these studies and others that, while weaker, are relevant. Based on gun model information available for a subset of cases in the Jersey City study, there were 12 gunfire cases involving guns manufactured with LCMs before the ban (7 of which resulted in wounded victims) and 94 gunfire cases involving revolvers or semiautomatic models without LCMs. Comparisons of these cases produced results similar to those of the main analysis: shot fired estimates ranged from 2.83 to 3.25 for the LCM cases and 2.22 to 2.6 for the non-LCM cases; 1.14 victims were wounded on average in the LCM gunshot cases and 1.06 in the non-LCM gunshot cases; and LCM gunshot victims had 1.14 wound on average, which, contrary to expectations, was less than the 1.47 average for other gunshot victims.

The compilation of mass shooting incidents cited in Table 9-1 had tentative shots fired estimates for 3 of the AW-LCM cases and 4 of the other cases. The AW-LCM cases averaged 93 shots per incident, a figure two and a half times greater than the 36.5 shot average for the other cases.

Finally, another study of firearm mass murders found that the average number of victims killed (tallies did not include others wounded) was 6 in AW cases and 4.5 in other cases (Roth and Koper, 1997, Appendix A). Only 2 of the 52 cases studied clearly involved AWs (or very similar guns). However, the make and model of the firearm were available for only eight cases, so additional incidents may have involved LCMs; in fact, at least 35% of the cases involved unidentified semiautomatics. (For those cases in which at least the gun type and firing action were known, semiautomatics outnumbered non-semiautomatics by 6 to 1, perhaps suggesting that semiautomatics are used disproportionately in mass murders.)



### 9.2.1. *Will a 10-Round Magazine Limit Reduce Gunshot Victimitizations?*

Specific data on shots fired in gun attacks are quite fragmentary and often inferred indirectly, but they suggest that relatively few attacks involve more than 10 shots fired.<sup>105</sup> Based on national data compiled by the FBI, for example, there were only about 19 gun murder incidents a year involving four or more victims from 1976 through 1995 (for a total of 375) (Fox and Levin, 1998, p. 435) and only about one a year involving six or more victims from 1976 through 1992 (for a total of 17) (Kleck, 1997, p. 126). Similarly, gun murder victims are shot two to three times on average according to a number of sources (see Table 9-2 and Koper and Roth, 2001a), and a study at a Washington, DC trauma center reported that only 8% of all gunshot victims treated from 1988 through 1990 had five or more wounds (Webster et al., 1992, p. 696).

However, counts of victims hit or wounds inflicted provide only a lower bound estimate of the number of shots fired in an attack, which could be considerably higher in light of the low hit rates in gunfire incidents (see above).<sup>106</sup> The few available studies on shots fired show that assailants fire less than four shots on average (see sources in Table 9-1 and Goehl, 1993), a number well within the 10-round magazine limit imposed by the AW-LCM ban, but these studies have not usually presented the full distribution of shots fired for all cases, so it is usually unclear how many cases, if any, involved more than 10 shots.

An exception is the aforementioned study of handgun murders and assaults in Jersey City (Reedy and Koper, 2003). Focusing on cases for which at least the type of handgun (semiautomatic, revolver, derringer) could be determined, 2.5% of the gunfire cases involved more than 10 shots.<sup>107</sup> These incidents – all of which involved pistols – had a 100% injury rate and accounted for 4.7% of all gunshot victims in the sample (see Figure 9-2). Offenders fired a total of 83 shots in these cases, wounding 7 victims, only 1 of whom was wounded more than once. Overall, therefore, attackers fired over 8 shots

<sup>105</sup> Although the focus of the discussion is on attacks with more than 10 shots fired, a gun user with a post-ban 10-round magazine can attain a firing capacity of 11 shots with many semiautomatics by loading one bullet into the chamber before loading the magazine.

<sup>106</sup> As a dramatic example, consider the heavily publicized case of Amadou Diallo, who was shot to death by four New York City police officers just a few years ago. The officers in this case fired upon Diallo 41 times but hit him with only 19 shots (a 46% hit rate), despite his being confined in a vestibule. Two of the officers reportedly fired until they had emptied their 16-round magazines, a reaction that may not be uncommon in such high-stress situations. In official statistics, this case will appear as having only one victim.

<sup>107</sup> The shots fired estimates were based on reported gunshot injuries, physical evidence (for example, shell casings found at the scene), and the accounts of witnesses and actors. The 2.5% figure is based on minimum estimates of shots fired. Using maximum estimates, 3% of the gunfire incidents involved more than 10 shots (Reedy and Koper, 2003, p. 154).

A caveat to these figures is that the federal LCM ban was in effect for much of the study period (which spanned January 1992 to November 1996), and a New Jersey ban on magazines with more than 15 rounds predated the study period. It is thus conceivable that these laws reduced attacks with LCM guns and attacks with more than 10 shots fired, though it seems unlikely that the federal ban had any such effect (see the analyses of LCM use presented in the previous chapter). Approximately 1% of the gunfire incidents involved more than 15 shots.

for every wound inflicted, suggesting that perhaps fewer persons would have been wounded had the offenders not been able to fire as often.<sup>108</sup>

## **Figure 9-2. Attacks With More Than 10 Shots Fired**

### **Jersey City Handgun Attacks, 1992-1996**

- **2.5% - 3% of gunfire incidents involved 11+ shots**
  - **3.6% - 4.2% of semiauto pistol attacks**
- **100% injury rate**
- **Produced 4.7% of all gunshot wound victims**
- **8.3 shots per gunshot wound**

Based on data reported by Reedy and Koper (2003). Injury statistics based on the 2.5% of cases involving 11+ shots by minimum estimate.

Caution is warranted in generalizing from these results because they are based on a very small number of incidents (6) from one sample in one city. Further, it is not known if the offenders in these cases had LCMs (gun model and magazine information was very limited); they may have emptied small magazines, reloaded, and continued firing. But subject to these caveats, the findings suggest that the ability to deliver more than 10 shots without reloading may be instrumental in a small but non-trivial percentage of gunshot victimizations.

On the other hand, the Jersey City study also implies that eliminating AWs and LCMs might only reduce gunshot victimizations by up to 5%. And even this estimate is probably overly optimistic because the LCM ban cannot be expected to prevent all incidents with more than 10 shots. Consequently, any effects from the ban (should it be extended) are likely to be smaller and perhaps quite difficult to detect with standard statistical methods (see Koper and Roth, 2001a), especially in the near future, if recent patterns of LCM use continue.

### **9.3. Post-Ban Trends in Lethal and Injurious Gun Violence**

Having established some basis for believing the AW-LCM ban could have at least a small effect on lethal and injurious gun violence, is there any evidence of such an effect to date? Gun homicides plummeted from approximately 16,300 in 1994 to 10,100 in 1999, a reduction of about 38% (see the Federal Bureau of Investigation's *Uniform Crime*

<sup>108</sup> These figures are based on a supplemental analysis not contained in the published study. We thank Darin Reedy for this analysis.



*Reports*). Likewise, non-fatal, assaultive gunshot injuries treated in hospitals nationwide declined one-third, from about 68,400 to under 46,400, between 1994 and 1998 (Gotsch et al., 2001, pp. 23-24). Experts believe numerous factors contributed to the recent drop in these and other crimes, including changing drug markets, a strong economy, better policing, and higher incarceration rates, among others (Blumstein and Wallman, 2000). Attributing the decline in gun murders and shootings to the AW-LCM ban is problematic, however, considering that crimes with LCMs appear to have been steady or rising since the ban. For this reason, we do not undertake a rigorous investigation of the ban's effects on gun violence.<sup>109</sup>

But a more casual assessment shows that gun crimes since the ban have been no less likely to cause death or injury than those before the ban, contrary to what we might expect if crimes with AWs and LCMs had both declined. For instance, the percentage of violent gun crimes resulting in death has been very stable since 1990 according to national statistics on crimes reported to police (see Figure 9-1 in section 9.1).<sup>110</sup> In fact, the percentage of gun crimes resulting in death during 2001 and 2002 (2.94%) was slightly higher than that during 1992 and 1993 (2.9%).

Similarly, neither medical nor criminological data sources have shown any post-ban reduction in the percentage of crime-related gunshot victims who die. If anything, this percentage has been higher since the ban, a pattern that could be linked in part to more multiple wound victimizations stemming from elevated levels of LCM use. According to medical examiners' reports and hospitalization estimates, about 20% of gunshot victims died nationwide in 1993 (Gotsch et al., 2001). This figure rose to 23% in 1996, before declining to 21% in 1998 (Figure 9-3).<sup>111</sup> Estimates derived from the Uniform Crime Reports and the Bureau of Justice Statistics' annual National Crime Victimization Survey follow a similar pattern from 1992 to 1999 (although the ratio of fatal to non-fatal cases is much higher in these data than that in the medical data) and also show a considerable increase in the percentage of gunshot victims who died in 2000 and 2001 (Figure 9-3).<sup>112</sup> Of course, changes in offender behavior or other changes in crime

<sup>109</sup> In our prior study (Koper and Roth 2001a; Roth and Koper, 1997, Chapter 6), we estimated that gun murders were about 7% lower than expected in 1995 (the first year after the ban), adjusting for pre-existing trends. However, the very limited post-ban data available for that study precluded a definitive judgment as to whether this drop was statistically meaningful (see especially Koper and Roth, 2001a). Furthermore, that analysis was based on the assumption that crimes with both AWs and LCMs had dropped in the short-term aftermath of the ban, an assumption called into question by the findings of this study. It is now more difficult to credit the ban with any of the drop in gun murders in 1995 or anytime since. We did not update the gun murder analysis because interpreting the results would be unavoidably ambiguous. Such an investigation will be more productive after demonstrating that the ban has reduced crimes with both AWs and LCMs.

<sup>110</sup> The decline in this figure during the 1980s was likely due in part to changes in police reporting of aggravated assaults in recent decades (Blumstein, 2000). The ratio of gun murders to gun robberies rose during the 1980s, then declined and remained relatively flat during the 1990s.

<sup>111</sup> Combining homicide data from 1999 with non-fatal gunshot estimates for 2000 suggests that about 20% of gunshot victimizations resulted in death during 1999 and 2000 (Simon et al., 2002).

<sup>112</sup> The SHR/NCVS estimates should be interpreted cautiously because the NCVS appears to undercount non-fatal gunshot wound cases by as much as two-thirds relative to police data, most likely because it fails to represent adequately the types of people most likely to be victims of serious crime (i.e., young urban males who engage in deviant lifestyles) (Cook, 1985). Indeed, the rate of death among gunshot victims

weaponry (such as an increase in shootings with large caliber handguns) may have influenced these trends. Yet is worth noting that multiple wound shootings were elevated over pre-ban levels during 1995 and 1996 in four of five localities examined during our first AW study, though most of the differences were not statistically significant (Table 9-4, panels B through E).

Another potential indicator of ban effects is the percentage of gunfire incidents resulting in fatal or non-fatal gunshot victimizations. If attacks with AWs and LCMs result in more shots fired and victims hit than attacks with other guns and magazines, we might expect a decline in crimes with AWs and LCMs to reduce the share of gunfire incidents resulting in victims wounded or killed. Measured nationally with UCR and NCVS data, this indicator was relatively stable at around 30% from 1992 to 1997, before rising to about 40% from 1998 through 2000 (Figure 9-4).<sup>113</sup> Along similar lines, multiple victim gun homicides remained at relatively high levels through at least 1998, based on the national average of victims killed per gun murder incident (Table 9-4, panel A).<sup>114</sup>

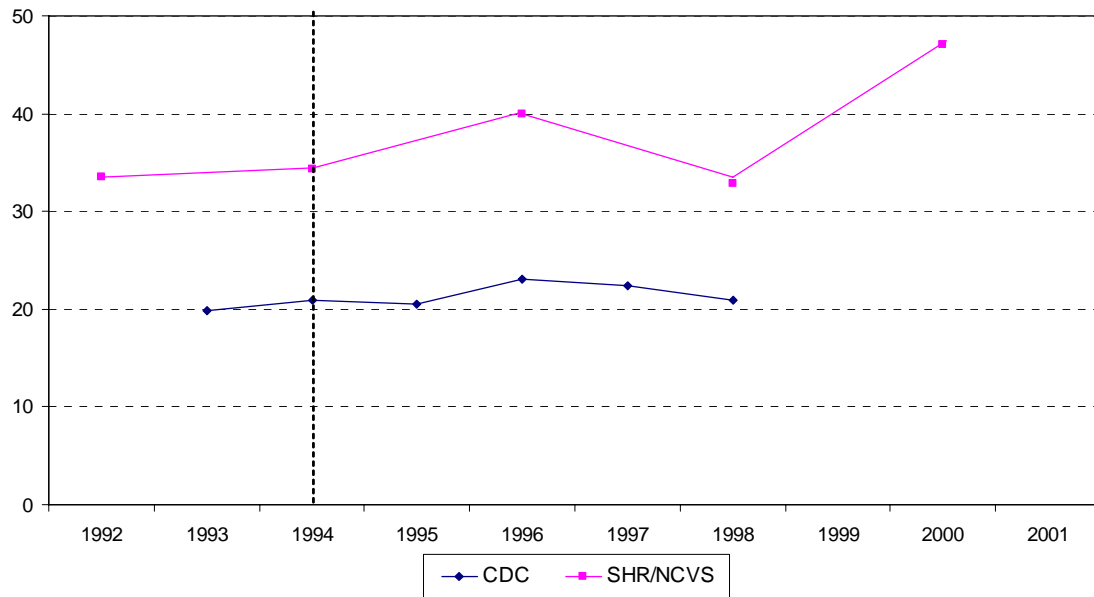
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appears much higher in the SHR/NCVS series than in data compiled from medical examiners and hospitals (see the CDC series in Figure 9-3). But if these biases are relatively consistent over time, the data may still provide useful insights into trends over time.

<sup>113</sup> The NCVS estimates are based on a compilation of 1992-2002 data recently produced by the Inter-University Consortium for Political and Social Research (ICPSR study 3691). In 2002, only 9% of non-fatal gunfire incidents resulted in gunshot victimizations. This implies a hit rate for 2002 that was below pre-ban levels, even after incorporating gun homicide cases into the estimate. However, the 2002 NCVS estimate deviates quite substantially from earlier years, for which the average hit rate in non-fatal gunfire incidents was 24% (and the estimate for 2001 was 20%). Therefore, we did not include the 2002 data in our analysis. We used two-year averages in Figures 9-3 and 9-4 because the annual NCVS estimates are based on very small samples of gunfire incidents. The 2002 sample was especially small, so it seems prudent to wait for more data to become available before drawing conclusions about hit rates since 2001.

<sup>114</sup> We thank David Huffer for this analysis.

**Figure 9-3. Percentage of Gunshot Victimization Resulting in Death  
(National), 1992-2001**



SHR/NCVS series based on two-year averages from the Supplemental Homicide Reports and National Crime Victimization Survey. CDC series based on homicide and hospitalization data from the Centers for Disease Control (reported by Gotsch et al. 2001).

**Table 9-4. Short-Term, Post-Ban Changes in the Lethality and Injuriousness of Gun Violence: National and Local Indicators, 1994-1998 <sup>a</sup>**

<b>Measure and Location</b>	<b><u>Pre-Ban Period</u></b>	<b><u>Post-Ban Period</u></b>	<b>Change</b>
A. Victims Per Gun Homicide Incident (National)	Jan. 1986-Sept. 1994 1.05 (N=106,668)	Oct. 1994-Dec. 1998 1.06 (N=47,511)	1% **
B. Wounds per Gun Homicide Victim: Milwaukee County	Jan. 1992-Aug. 1994 2.28 (N=282)	Sept. 1994-Dec. 1995 2.52 (N=136)	11%
C. Wounds Per Gun Homicide Victim: Seattle (King County)	Jan. 1992-Aug. 1994 2.08 (N=184)	Sept. 1994-Jun. 1996 2.46 (N=91)	18%
D. Wounds Per Gunshot Victim: Jersey City (NJ)	Jan. 1992-Aug. 94 1.42 (N=125)	Sept. 1994-Jun. 1996 1.39 (N=137)	-2%
E. % of Gun Homicide Victims With Multiple Wounds: San Diego County	Jan. 1992-Aug. 1994 41% (N=445)	Sept. 1994-Jun. 1996 43% (N=223)	5%
F. % of Non-Fatal Gunshot Victims With Multiple Wounds: Boston	Jan. 1992-Aug. 1994 18% (N=584)	Sept. 1994-Dec. 1995 24% (N=244)	33% *

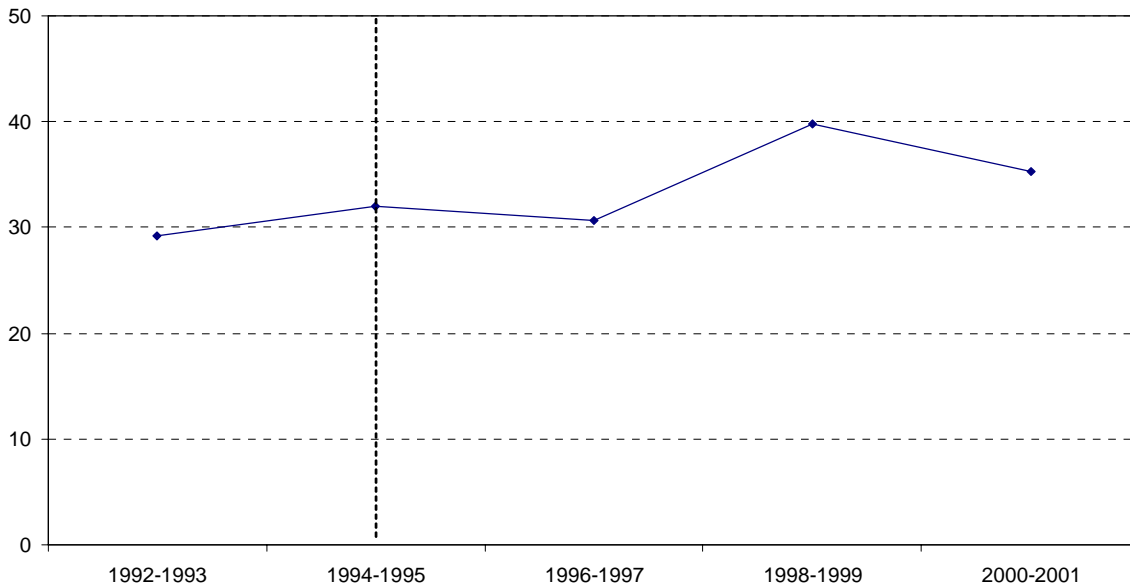
a. National victims per incident figures based on unpublished update of analysis reported in Roth and Koper (1997, Chapter 5). Gunshot wound data are taken from Roth and Koper (1997, Chapter 6) and Koper and Roth (2001a). Wound data are based on medical examiners' reports (Milwaukee, Seattle, San Diego), hospitalization data (Boston), and police reports (Jersey City).

\* Chi-square p level < .1.

\*\* T-test p level < .01.

If anything, therefore, gun attacks appear to have been more lethal and injurious since the ban. Perhaps elevated LCM use has contributed to this pattern. But if this is true, then the reverse would also be true – a reduction in crimes with LCMs, should the ban be extended, would reduce injuries and deaths from gun violence.

**Figure 9-4. Percentage of Gunfire Cases Resulting in Gunshot Victimizations (National), 1992-2001**



Based on two-year averages from the Supplemental Homicide Reports and National Crime Victimization Survey.

#### 9.4. Summary

Although the ban has been successful in reducing crimes with AWs, any benefits from this reduction are likely to have been outweighed by steady or rising use of non-banned semiautomatics with LCMs, which are used in crime much more frequently than AWs. Therefore, we cannot clearly credit the ban with any of the nation's recent drop in gun violence. And, indeed, there has been no discernible reduction in the lethality and injuriousness of gun violence, based on indicators like the percentage of gun crimes resulting in death or the share of gunfire incidents resulting in injury, as we might have expected had the ban reduced crimes with both AWs and LCMs.

However, the grandfathering provision of the AW-LCM ban guaranteed that the effects of this law would occur only gradually over time. Those effects are still unfolding and may not be fully felt for several years into the future, particularly if foreign, pre-ban LCMs continue to be imported into the U.S. in large numbers. It is thus premature to make definitive assessments of the ban's impact on gun violence.

Having said this, the ban's impact on gun violence is likely to be small at best, and perhaps too small for reliable measurement. AWs were used in no more than 8% of gun crimes even before the ban. Guns with LCMs are used in up to a quarter of gun crimes, but it is not clear how often the outcomes of gun attacks depend on the ability to fire more than 10 shots (the current limit on magazine capacity) without reloading.

Nonetheless, reducing crimes with AWs and especially LCMs could have non-trivial effects on gunshot victimizations. As a general matter, hit rates tend to be low in gunfire incidents, so having more shots to fire rapidly can increase the likelihood that offenders hit their targets, and perhaps bystanders as well. While not entirely consistent, the few available studies contrasting attacks with different types of guns and magazines generally suggest that attacks with semiautomatics – including AWs and other semiautomatics with LCMs – result in more shots fired, persons wounded, and wounds per victim than do other gun attacks. Further, a study of handgun attacks in one city found that about 3% of gunfire incidents involved more than 10 shots fired, and those cases accounted for nearly 5% of gunshot victims. However, the evidence on these matters is too limited (both in volume and quality) to make firm projections of the ban's impact, should it be reauthorized.

## **10. LOOKING TO THE FUTURE: RESEARCH RECOMMENDATIONS AND SPECULATION ABOUT THE CONSEQUENCES OF REAUTHORIZING, MODIFYING, OR LIFTING THE ASSAULT WEAPONS BAN**

In this chapter, we discuss future lines of inquiry that would be informative whether or not the AW-LCM ban is renewed in September 2004. We then offer some brief thoughts about the possible consequences of reauthorizing the ban, modifying it, or allowing it to expire.

### **10.1. Research Recommendations and Data Requirements**

#### *10.1.1. An Agenda for Assault Weapons Research and Recommendations for Data Collection by Law Enforcement*

The effects of the AW-LCM ban have yet to be fully realized; therefore, we recommend continued study of trends in the availability and criminal use of AWs and LCMs. Even if the ban is lifted, longer-term study of crimes with AWs and LCMs will inform future assessment of the consequences of these policy shifts and improve understanding of the responses of gun markets to gun legislation more generally.<sup>115</sup>

Developing better data on crimes with LCMs is especially important. To this end, we urge police departments and their affiliated crime labs to record information about magazines recovered with crime guns. Further, we recommend that ATF integrate ammunition magazine data into its national gun tracing system and encourage reporting of magazine data by police departments that trace firearms.

As better data on LCM use become available, more research is warranted on the impacts of AW and LCM trends (which may go up or down depending on the ban's fate) on gun murders and shootings, as well as levels of death and injury per gun crime. Indicators of the latter, such as victims per gunfire incident and wounds per gunshot victim, are useful complementary outcome measures because they reflect the mechanisms through which use of AWs and LCMs is hypothesized to affect gun deaths and injuries.<sup>116</sup> Other potentially promising lines of inquiry might relate AW and LCM use to mass murders and murders of police, crimes that are very rare but appear more likely to involve AWs (and perhaps LCMs) and to disproportionately affect public perceptions.<sup>117</sup>

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<sup>115</sup> Establishing time series data on primary and secondary market prices and production or importation of various guns and magazines of policy interest could provide benefits for policy researchers. Like similar statistical series maintained for illegal drugs, such price and production series would be valuable instruments for monitoring effects of policy changes and other influences on markets for various weapons.

<sup>116</sup> However, more research is needed on the full range of factors that cause variation in these indicators over time and between places.

<sup>117</sup> Studying these crimes poses a number of challenges, including modeling of rare events, establishing the reliability and validity of methods for measuring the frequency and characteristics of mass murders (such as through media searches; see Duwe, 2000, Roth and Koper, 1997, Appendix A), and controlling for factors like the use of bullet-proof vests by police.

Finally, statistical studies relating AW and LCM use to trends in gun violence should include statistical power analysis to ensure that estimated models have sufficient ability to detect small effects, an issue that has been problematic in some of our prior time series research on the ban (Koper and Roth, 2001a) and is applicable more generally to the study of modest, incremental policy changes.

Research on aggregate trends should be complemented by more incident-based studies that contrast the dynamics and outcomes of attacks with different types of guns and magazines, while controlling for relevant characteristics of the actors and situations. Such studies would refine predictions of the change in gun deaths and injuries that would follow reductions in attacks with AWs and LCMs. For instance, how many homicides and injuries involving AWs and LCMs could be prevented if offenders were forced to substitute other guns and magazines? In what percentage of gun attacks does the ability to fire more than ten rounds without reloading affect the number of wounded victims or determine the difference between a fatal and non-fatal attack? Do other AW features (such as flash hiders and pistol grips on rifles) have demonstrable effects on the outcomes of gun attacks? Studies of gun attacks could draw upon police incident reports, forensic examinations of recovered guns and magazines, and medical and law enforcement data on wounded victims.

#### *10.1.2. Studying the Implementation and Market Impacts of Gun Control*

More broadly, this study reiterates the importance of examining the implementation of gun policies and the workings of gun markets, considerations that have been largely absent from prior research on gun control. Typical methods of evaluating gun policies involve statistical comparisons of total or gun crime rates between places and/or time periods with and without different gun control provisions. Without complimentary implementation and market measures, such studies have a “black box” quality and may lead to misleading conclusions. For example, a time series study of gun murder rates before and after the AW-LCM ban might find that the ban has not reduced gun murders. Yet the interpretation of such a finding would be ambiguous, absent market or implementation measures. Reducing attacks with AWs and LCMs may in fact have no more than a trivial impact on gun deaths and injuries, but any such impact cannot be realized or adequately assessed until the availability and use of the banned guns and magazines decline appreciably. Additionally, it may take many years for the effects of modest, incremental policy changes to be fully felt, a reality that both researchers and policy makers should heed. Similar implementation concerns apply to the evaluation of various gun control policies, ranging from gun bans to enhanced sentences for gun offenders.

Our studies of the AW ban have shown that the reaction of manufacturers, dealers, and consumers to gun control policies can have substantial effects on demand and supply for affected weapons both before and after a law’s implementation. It is important to study these factors because they affect the timing and form of a law’s impact



on the availability of weapons to criminals and, by extension, the law's impact on gun violence.

## **10.2. Potential Consequences of Reauthorizing, Modifying, or Lifting the Assault Weapons Ban**

### *10.2.1. Potential Consequences of Reauthorizing the Ban As Is*

Should it be renewed, the ban might reduce gunshot victimizations. This effect is likely to be small at best and possibly too small for reliable measurement. A 5% reduction in gunshot victimizations is perhaps a reasonable upper bound estimate of the ban's potential impact (based on the only available estimate of gunshot victimizations resulting from attacks in which more than 10 shots were fired), but the actual impact is likely to be smaller and may not be fully realized for many years into the future, particularly if pre-ban LCMs continue to be imported into the U.S. from abroad. Just as the restrictions imposed by the ban are modest – they are essentially limits on weapon accessories like LCMs, flash hiders, threaded barrels, and the like – so too are the potential benefits.<sup>118</sup> In time, the ban may be seen as an effective prevention measure that stopped further spread of weaponry considered to be particularly dangerous (in a manner similar to federal restrictions on fully automatic weapons). But that conclusion will be contingent on further research validating the dangers of AWs and LCMs.

### *10.2.2. Potential Consequences of Modifying the Ban*

We have not examined the specifics of legislative proposals to modify the AW ban. However, we offer a few general comments about the possible consequences of such efforts, particularly as they relate to expanding the range of the ban as some have advocated (Halstead, 2003, pp. 11-12).

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<sup>118</sup> But note that although the ban's impact on gunshot victimizations would be small in percentage terms and unlikely to have much effect on the public's fear of crime, it could conceivably prevent hundreds of gunshot victimizations annually and produce notable cost savings in medical care alone. To help place this in perspective, there were about 10,200 gun homicides and 48,600 non-fatal, assault-related shootings in 2000 (see the FBI's *Uniform Crime Reports* for the gun homicide estimate and Simon et al. [2002] for the estimate of non-fatal shootings). Reducing these crimes by 1% would have thus prevented 588 gunshot victimizations in 2000 (we assume the ban did not actually produce such benefits because the reduction in AW use as of 2000 was outweighed by steady or rising levels of LCM use). This may seem insubstantial compared to the 342,000 murders, assaults, and robberies committed with guns in 2000 (see the *Uniform Crime Reports*). Yet, gunshot victimizations are particularly costly crimes. Setting aside the less tangible costs of lost lives and human suffering, the lifetime medical costs of assault-related gunshot injuries (fatal and non-fatal) were estimated to be about \$18,600 per injury in 1994 (Cook et al., 1999). Therefore, the lifetime costs of 588 gun homicides and shootings would be nearly \$11 million in 1994 dollars (the net medical costs could be lower for reasons discussed by Cook and Ludwig [2000] but, on the other hand, this estimate does not consider other governmental and private costs that Cook and Ludwig attribute to gun violence). This implies that small reductions in gunshot victimizations sustained over many years could produce considerable long-term savings for society. We do not wish to push this point too far, however, considering the uncertainty regarding the ban's potential impact.

Gun markets react strongly merely to debates over gun legislation. Indeed, debate over the AW ban's original passage triggered spikes upwards of 50% in gun distributors' advertised AW prices (Roth and Koper, 1997, Chapter 4). In turn, this prompted a surge in AW production in 1994 (Chapter 5). Therefore, it seems likely that discussion of broadening the AW ban to additional firearms would raise prices and production of the weapons under discussion. (Such market reactions may already be underway in response to existing proposals to expand the ban, but we have not investigated this issue.) Heightened production levels could saturate the market for the weapons in question, depressing prices and delaying desired reductions in crimes with the weapons, as appears to have happened with banned ARs.

Mandating further design changes in the outward features of semiautomatic weapons (e.g., banning weapons having any military-style features) may not produce benefits beyond those of the current ban. As noted throughout this report, the most important feature of military-style weapons may be their ability to accept LCMs, and this feature has been addressed by the LCM ban and the LCMM rifle ban. Whether changing other features of military-style firearms will produce measurable benefits is unknown.

Finally, curbing importation of pre-ban LCMs should help reduce crimes with LCMs and possibly gunshot victimizations. Crimes with LCMs may not decline substantially for quite some time if millions of LCMs continue to be imported into the U.S.

### *10.2.3. Potential Consequences of Lifting the Ban*

If the ban is lifted, it is likely that gun and magazine manufacturers will reintroduce AW models and LCMs, perhaps in substantial numbers.<sup>119</sup> In addition, AWs grandfathered under the 1994 law may lose value and novelty, prompting some of their lawful owners to sell them in secondary markets, where they may reach criminal users. Any resulting increase in crimes with AWs and LCMs might increase gunshot victimizations, though this effect could be difficult to discern statistically.

It is also possible, and perhaps probable, that new AWs and LCMs will eventually be used to commit mass murder. Mass murders garner much media attention, particularly when they involve AWs (Duwe, 2000). The notoriety likely to accompany mass murders if committed with AWs and LCMs, especially after these guns and magazines have been deregulated, could have a considerable negative impact on public perceptions, an effect that would almost certainly be intensified if such crimes were committed by terrorists operating in the U.S.

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<sup>119</sup> Note, however, that foreign semiautomatic rifles with military features, including the LCMM rifles and several rifles prohibited by the 1994 ban, would still be restricted by executive orders passed in 1989 and 1998. Those orders stem from the sporting purposes test of the Gun Control Act of 1968.

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# EXHIBIT 115



# Bureau of Justice Statistics Selected Findings

July 1995, NCJ-148201

## *Firearms, crime, and criminal justice*

# Guns Used in Crime

By Marianne W. Zawitz  
BJS Statistician

### How often are guns used in violent crimes?

According to the National Crime Victimization Survey (NCVS), almost 43.6 million criminal victimizations occurred in 1993, including 4.4 million violent crimes of rape and sexual assault, robbery, and aggravated assault. Of the victims of these violent crimes, 1.3 million (29%) stated that they faced an offender with a firearm.\*

In 1993, the FBI's *Crime in the United States* estimated that almost 2 million violent crimes of murder, rape, robbery, and aggravated assault were reported to the police by citizens. About 582,000 of these reported murders, robberies, and aggravated assaults were committed with firearms. Murder was the crime that most frequently involved firearms; 70% of the 24,526 murders in 1993 were committed with firearms.

### How do we know about the guns used by criminals?

No national collection of data contains detailed information about all of the guns used in crimes. Snapshots of

## Highlights

- Although most crime is not committed with guns, most gun crime is committed with handguns. *pages 1 & 2*
- Although most available guns are not used in crime, information about the 223 million guns available to the general public provides a context for evaluating criminal preferences for guns. *page 2*
- By definition, stolen guns are available to criminals. The FBI's National Crime Information Center (NCIC) stolen gun file contains over 2 million reports; 60% are reports of stolen handguns. *page 3*
- In 1994, the Bureau of Alcohol, Tobacco and Firearms (ATF) received over 85,132 requests from law enforcement agencies for traces of guns used in crime. Over three-quarters of the guns traced by the

ATF in 1994 were handguns (mostly pistols), and almost a third were less than 3 years old. *page 4*

- Surveys of inmates show that they prefer concealable, large caliber guns. Juvenile offenders appear to be more likely to possess guns than adults. *page 5*
- Studies of the guns used in homicides show that large caliber revolvers are the most frequent type of gun used in homicides, but the number of large caliber semiautomatic guns used in murders is increasing. *page 5*
- Little information exists about the use of assault weapons in crime. The information that does exist uses varying definitions of assault weapons that were developed before the Federal assault weapons ban was enacted. *page 6*

information about the guns used by criminals are available from —

- official police records concerning the guns recovered in crimes and reports gathered from victims
- surveys that interview criminals
- surveys that interview victims of crime.

From these sources, we know how often guns are involved in crime, how guns are used in crime, what general categories of firearms are most often used in crime, and, to a limited extent, the specific types of guns most frequently used by criminals.

\* See note on page 7.

**What are the different types of firearms?****Types**

<b>Handgun</b>	A weapon designed to fire a small projectile from one or more barrels when held in one hand with a short stock designed to be gripped by one hand.
Revolver	A handgun that contains its ammunition in a revolving cylinder that typically holds five to nine cartridges, each within a separate chamber. Before a revolver fires, the cylinder rotates, and the next chamber is aligned with the barrel.
Pistol	Any handgun that does not contain its ammunition in a revolving cylinder. Pistols can be manually operated or semiautomatic. A semiautomatic pistol generally contains cartridges in a magazine located in the grip of the gun. When the semiautomatic pistol is fired, the spent cartridge that contained the bullet and propellant is ejected, the firing mechanism is cocked, and a new cartridge is chambered.
Derringer	A small single- or multiple-shot handgun other than a revolver or semiautomatic pistol.
<b>Rifle</b>	A weapon intended to be fired from the shoulder that uses the energy of the explosive in a fixed metallic cartridge to fire only a single projectile through a rifled bore for each single pull of the trigger.
<b>Shotgun</b>	A weapon intended to be fired from the shoulder that uses the energy of the explosive in a fixed shotgun shell to fire through a smooth bore either a number of ball shot or a single projectile for each single pull of the trigger.

**Firing action**

Fully automatic	Capability to fire a succession of cartridges so long as the trigger is depressed or until the ammunition supply is exhausted. Automatic weapons are considered machineguns subject to the provisions of the National Firearms Act.
Semiautomatic	An autoloading action that will fire only a single shot for each single function of a trigger.
Machinegun	Any weapon that shoots, is designed to shoot, or can be readily restored to shoot automatically more than one shot without manual reloading by a single function of the trigger.
Submachinegun	A simple fully automatic weapon that fires a pistol cartridge that is also referred to as a machine pistol.

**Ammunition**

Caliber	The size of the ammunition that a weapon is designed to shoot, as measured by the bullet's approximate diameter in inches in the United States and in millimeters in other countries. In some instances, ammunition is described with additional terms, such as the year of its introduction (.30/06) or the name of the designer (.30 Newton). In some countries, ammunition is also described in terms of the length of the cartridge case (7.62 x 63 mm).
Gauge	For shotguns, the number of spherical balls of pure lead, each exactly fitting the bore, that equals one pound.

Sources: ATF, *Firearms & Explosives Tracing Guidebook*, September 1993, pp. 35-40, and Paul C. Giannelli, "Ballistics Evidence: Firearms Identification," *Criminal Law Bulletin*, May-June 1991, pp. 195-215.

**Handguns are most often the type of firearm used in crime**

- According to the Victim Survey (NCVS), 25% of the victims of rape and sexual assault, robbery, and aggravated assault in 1993 faced an offender armed with a handgun. Of all firearm-related crime reported to the survey, 86% involved handguns.
- The FBI's Supplemental Homicide Reports show that 57% of all murders in 1993 were committed with handguns, 3% with rifles, 5% with shotguns, and 5% with firearms where the type was unknown.
- The 1991 Survey of State Prison Inmates found that violent inmates who used a weapon were more likely to use a handgun than any other weapon; 24% of all violent inmates reported that they used a handgun. Of all inmates, 13% reported carrying a handgun when they committed the offense for which they were serving time.

**What types of guns do criminals prefer?**

Research by Wright and Rossi in the 1980's found that most criminals prefer guns that are easily concealable, large caliber, and well made. Their studies also found that the handguns used by the felons interviewed were similar to the handguns available to the general public, except that the criminals preferred larger caliber guns.

**What types of guns are available generally?**

The Bureau of Alcohol, Tobacco and Firearms (ATF) estimates that from 1899 to 1993 about 223 million guns became available in the United States, including over 79 million rifles, 77 million handguns, and 66 million shotguns. The number of guns seized, destroyed, lost, or not working is unknown.

The number of new handguns added to those available has exceeded the number of new shotguns and rifles in recent years. More than half of the guns added in 1993 were handguns.

Over 40 million handguns have been produced in the United States since 1973.

Since over 80% of the guns available in the United States are manufactured here, gun production is a reasonable indicator of the guns made available. From 1973 to 1993, U.S. manufacturers produced —

- 6.6 million .357 Magnum revolvers
- 6.5 million .38 Special revolvers
- 5.4 million .22 caliber pistols
- 5.3 million .22 caliber revolvers
- 4.5 million .25 caliber pistols
- 3.1 million 9 millimeter pistols
- 2.4 million .380 caliber pistols
- 2.2 million .44 Magnum revolvers
- 1.7 million .45 caliber pistols
- 1.2 million .32 caliber revolvers.

During the two decades from 1973 to 1993, the types of handguns most frequently produced have changed. Most new handguns are pistols rather than revolvers. Pistol production grew from 28% of the handguns produced in the United States in 1973 to 80% in 1993.

The number of large caliber pistols produced annually increased substantially after 1986. Until the mid-1980's, most pistols produced in the United States were .22 and .25 caliber models. Production of .380 caliber and 9 millimeter pistols began to increase substantially in 1987, so that by 1993 they became the most frequently produced pistols. From 1991 to 1993, the last 3 years for which data are available, the most frequently produced handguns were —

- .380 caliber pistols (20%)
- 9 millimeter pistols (19%)
- .22 caliber pistols (17%)
- .25 caliber pistols (13%)
- .50 caliber pistols (8%).

### Stolen guns are a source of weapons for criminals

All stolen guns are available to criminals by definition. Recent studies of adult and juvenile offenders show that many have either stolen a firearm or kept, sold, or traded a stolen firearm:

- According to the 1991 Survey of State Prison Inmates, among those inmates who possessed a handgun, 9% had acquired it through theft, and 28% had acquired it through an illegal market such as a drug dealer or fence. Of all inmates, 10% had stolen at least one gun, and 11% had sold or traded stolen guns.

- Studies of adult and juvenile offenders that the Virginia Department of Criminal Justice Services conducted in 1992 and 1993 found that 15% of the adult offenders and 19% of the juvenile offenders had stolen guns; 16% of the adults and 24% of the juveniles had kept a stolen gun; and 20% of the adults and 30% of the juveniles had sold or traded a stolen gun.

- From a sample of juvenile inmates in four States, Sheley and Wright found that more than 50% had stolen a gun at least once in their lives and 24% had stolen their most recently obtained handgun. They concluded that theft and burglary were the original, not always the proximate, source of many guns acquired by the juveniles.

### How many guns are stolen?

The Victim Survey (NCVS) estimates that there were 341,000 incidents of firearm theft from private citizens annually from 1987 to 1992. Because the survey does not ask how many guns were stolen, the number of guns stolen probably exceeds the number of incidents of gun theft.

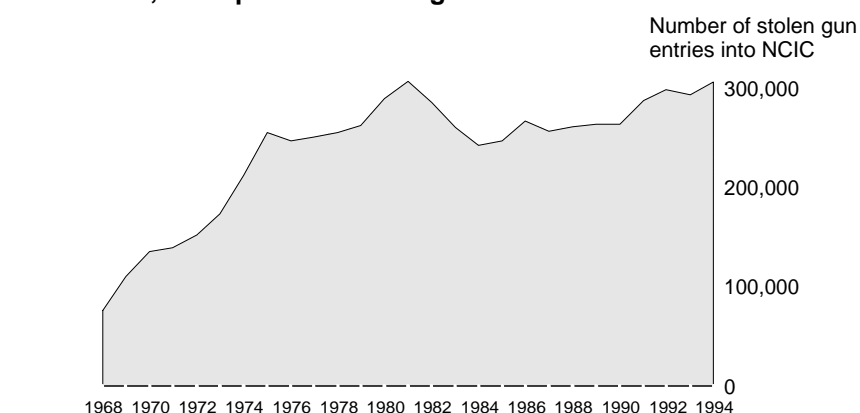
The FBI's National Crime Information Center (NCIC) stolen gun file contained over 2 million reports as of March 1995. In 1994, over 306,000 entries were added to this file including a variety of guns, ammunition, canons, and grenades. Reports of stolen guns are included in the NCIC files when citizens report a theft to law enforcement agencies that submit a report to the FBI. All entries must include make, caliber, and serial number. Initiated in 1967, the NCIC stolen gun file retains all entries indefinitely unless a recovery is reported.

### Most stolen guns are handguns

Victims report to the Victim Survey that handguns were stolen in 53% of the thefts of guns. The FBI's stolen gun file's 2 million reports include information on —

- 1.26 million handguns (almost 60%)
- 470,000 rifles (22%)
- 356,000 shotguns (17%).

**From 1985 to 1994, the FBI received an annual average of over 274,000 reports of stolen guns**



Source: FBI, National Crime Information Center, 1995.

### How many automatic weapons are stolen?

Under the provisions of the National Firearms Act, all automatic weapons such as machine guns must be registered with the ATF. In 1995, over 240,000 automatic weapons were registered with the ATF. As of March 1995, the NCIC stolen gun file contained reports on about 7,700 machine guns and submachine guns.

### What types of handguns are most frequently stolen?

Most frequently reported handguns in the NCIC stolen gun file

Percent of stolen handguns	Number	Caliber	Type
20.5%	259,184	.38	Revolver
11.7	147,681	.22	Revolver
11.6	146,474	.357	Revolver
8.8	111,558	9 mm	Semiautomatic
7.0	87,714	.25	Semiautomatic
6.7	84,474	.22	Semiautomatic
5.4	68,112	.380	Semiautomatic
3.7	46,503	.45	Semiautomatic
3.3	41,318	.32	Revolver
3.1	39,254	.44	Revolver
1.5	18,377	.32	Semiautomatic
1.3	16,214	.45	Revolver

### Upon request, the ATF traces some guns used in crime to their origin

The National Tracing Center of ATF traces firearms to their original point of sale upon the request of police agencies. The requesting agency can use this information to assist in identifying suspects, providing evidence for subsequent prosecution, establishing stolen status, and proving ownership. The number of requests for firearms traces increased from 37,181 in 1990 to 85,132 in 1994.

Trace requests represent an unknown portion of all the guns used in crimes. ATF is not able to trace guns manufactured before 1968, most surplus military weapons, imported guns without the importer's name, stolen guns, and guns missing a legible serial number.

Police agencies do not request traces on all firearms used in crimes. Not all firearms used in crimes are recovered so that a trace could be done and, in some States and localities, the police agencies may be able to establish ownership locally without going to the ATF.

### Most trace requests concern handguns

Over half of the guns that police agencies asked ATF to trace were pistols and another quarter were revolvers.

Type of gun	Percent of all 1994 traces
Total	100.0%
Handgun	79.1
Pistol	53.0
Pistol Revolver	24.7
Pistol Derringer	1.4
Rifle	11.1
Shotgun	9.7
Other including machinegun	0.1

While trace requests for all types of guns increased in recent years, the number of pistols traced increased the most, doubling from 1990 to 1994.

### What are the countries of origin of the guns that are traced?

Traced guns come from many countries across the globe. However, 78% of the guns that were traced in 1994 originated in the United States and most of the rest were from —

- Brazil (5%)
- Germany (3%)
- China (3%)
- Austria (3%)
- Italy (2%)
- Spain (2%).

### Almost a third of the guns traced by ATF in 1994 were 3 years old or less

Age of traced guns	Traces completed in 1994	
	Number	Percent
Total	83,362	100%
Less than 1 year	4,072	5
1 year	11,617	14
2 years	6,764	8
3 years	4,369	5

### What crimes are most likely to result in a gun-tracing request?

Crime type	Percent of all 1994 traces	Percent of traces by crime type						
		Handgun					Rifle	Shotgun
		Total	Total	Pistol	Pistol Derringer	Pistol Revolver		
Weapons offenses	72%	100%	81%	55%	1%	25%	10%	9%
Drug offenses	12	100	75	50	2	23	14	11
Homicide	6	100	79	49	1	29	11	10
Assault	5	100	80	50	1	28	10	11
Burglary	2	100	57	34	1	22	24	19
Robbery	2	100	84	53	1	29	7	10
Other	2	100	76	54	1	21	14	10

Note: Detail may not add to total because of rounding.  
Source: ATF, unpublished data, May 1995.



**What guns are the most frequently traced?**

The most frequently traced guns vary from year to year. The ATF publishes a list of the 10 specific guns most frequently traced annually. The total number of traced guns on the top 10 list was 18% of the total traced from 1991 to 1994. Most of the top 10 guns were pistols (over 30% were .25 caliber pistols), although a number of revolvers and a few shotguns and rifles were also included. The most frequently traced gun was a Smith and Wesson .38 caliber revolver in 1990, the Raven Arms P25 (a .25 caliber pistol) from 1991 through 1993, and the Lorcin P25 in 1994.

**10 most frequently traced guns in 1994**

Rank	Manufacturer	Model	Caliber	Type	Number traced
1	Lorcin	P25	.25	Pistol	3,223
2	Davis Industries	P380	.38	Pistol	2,454
3	Raven Arms	MP25	.25	Pistol	2,107
4	Lorcin	L25	.25	Pistol	1,258
5	Mossburg	500	12G	Shotgun	1,015
6	Phoenix Arms	Raven	.25	Pistol	959
7	Jennings	J22	.22	Pistol	929
8	Ruger	P89	9 mm	Pistol	895
9	Glock	17	9 mm	Pistol	843
10	Bryco	38	.38	Pistol	820

Source: ATF, May 1995.

**What caliber guns do criminals prefer?**

In their 1983 study, Wright, Rossi, and Daly asked a sample of felons about the handgun they had most recently acquired. Of the felons sampled —

- 29% had acquired a .38 caliber handgun
- 20% had acquired a .357 caliber handgun
- 16% had acquired a .22 caliber handgun.

Sheley and Wright found that the juvenile inmates in their 1991 sample in four States preferred large caliber, high quality handguns. Just prior to their confinement —

- 58% owned a revolver, usually a .38 or .357 caliber gun
- 55% owned a semiautomatic handgun, usually a 9 millimeter or .45 caliber gun
- 51% owned a sawed-off shotgun
- 35% owned a military-style automatic or semiautomatic rifle.

**Do juvenile offenders use different types of guns than adult offenders?**

A study of adult and juvenile offenders by the Virginia Department of Criminal Justice Services found that juvenile offenders were more likely than adults to have carried a semiautomatic pistol at the crime scene (18% versus 7%).

They were also more likely to have carried a revolver (10% versus 7%). The same proportion of adults and juveniles (3%) carried a shotgun or rifle at the crime scene.

**Some studies of guns used in homicides provide information about caliber**

McGonigal and colleagues at the University of Pennsylvania Medical Center studied firearm homicides that occurred in Philadelphia: 145 in 1985 and 324 in 1990. Most of the firearms used in the homicides studied were handguns: 90% in 1985 and 95% in 1990. In both years, revolvers were the predominant type of handgun used; however, the use of semiautomatic pistols increased from 24% in 1985 to 38% in 1990. The caliber of the handguns used also changed:

**In Philadelphia, handguns most often used:**

In 1985, of 91 homicides	In 1990, of 204 homicides
44% .38 caliber revolver	23% 9 mm pistol
19% .25 caliber pistol	18% .38 caliber revolver
14% .22 caliber revolver	16% .357 caliber revolver
14% .32 caliber revolver	16% .22 caliber revolver
3% 9 mm pistol	10% .32 caliber revolver
2% .357 caliber revolver	6% .380 caliber pistol

The Virginia Department of Criminal Justice Services studied 844 homicides that occurred in 18 jurisdictions

from 1989 through 1991. Firearms were identified as the murder weapon in 600 cases. Over 70% of the firearms used were handguns. Of those handguns for which the caliber and firing action could be identified, 19% were .38 caliber revolvers, 10% were .22 caliber revolvers, and 9% were 9 millimeter semiautomatic pistols.

The Hawaii Department of the Attorney General, Crime Prevention Division, studied 59 firearm-related homicides in Honolulu from 1988 to 1992. Handguns were used in 48 homicides (over 80%) including 11 handguns of 9 millimeter caliber, 10 of .357 caliber, 10 of .38 caliber, and 5 of .25 caliber.

**What caliber guns are used in the killings of law enforcement officers?**

From 1982 to 1993, of the 687 officers who were killed by firearms other than their own guns, more were killed by .38 caliber handguns than by any other type of weapon.

Type of firearm	Percent of law enforcement officers killed with a firearm
.38 caliber handgun	25.2%
.357 Magnum handgun	12.1
9 millimeter handgun	9.5
12 gauge shotgun	7.4
.22 caliber handgun	5.4
.22 caliber rifle	4.4

## How often are assault weapons used in crime?

Little information exists about the use of assault weapons in crime. The information that does exist uses varying definitions of assault weapons that were developed before the Federal assault weapons ban was enacted.

In general, assault weapons are semiautomatic firearms with a large magazine of ammunition that were designed and configured for rapid fire and combat use. An assault weapon can be a pistol, a rifle, or a shotgun. The Federal Violent Crime Control and Law Enforcement Act of 1994 bans the manufacture and sale of 19 specific assault weapons identified by make and manufacturer. It also provides for a ban on those weapons that have a combination of features such as flash suppressors and grenade launchers. The ban does not cover those weapons legally possessed before the law was enacted. The National Institute of Justice will be evaluating the effect of the ban and reporting to Congress in 1997.

In 1993 prior to the passage of the assault weapons ban, the Bureau of Alcohol, Tobacco and Firearms (ATF), reported that about 1% of the estimated 200 million guns

in circulation were assault weapons. Of the gun-tracing requests received that year by ATF from law enforcement agencies, 8% involved assault weapons.

## Assault weapons and homicide

A New York State Division of Criminal Justice Services study of homicides in 1993 in New York City found that assault weapons were involved in 16% of the homicides studied. The definition of assault weapons used was from proposed but not enacted State legislation that was more expansive than the Federal legislation. By matching ballistics records and homicide files, the study found information on 366 firearms recovered in the homicides of 271 victims. Assault weapons were linked to the deaths of 43 victims (16% of those studied).

A study by the Virginia Department of Criminal Justice Services reviewed the files of 600 firearm murders that occurred in 18 jurisdictions from 1989 to 1991. The study found that handguns were used in 72% of the murders (431 murders). Ten guns were identified as assault weapons, including five pistols, four rifles, and one shotgun.

## Assault weapons and offenders

In the 1991 BJS Survey of State Inmates, about 8% of the inmates reported that they had owned a military-type weapon, such as an Uzi, AK-47, AR-15, or M-16. Less than 1% said that they carried such a weapon when they committed the incident for which they were incarcerated. A Virginia inmate survey conducted between November 1992 and May 1993 found similar results: About 10% of the adult inmates reported that they had ever possessed an assault rifle, but none had carried it at the scene of a crime.

Two studies indicate higher proportions of juvenile offenders reporting possession and use of assault rifles. The Virginia inmate survey also covered 192 juvenile offenders. About 20% reported that they had possessed an assault rifle and 1% said that they had carried it at the scene of a crime. In 1991, Sheley and Wright surveyed 835 serious juvenile offenders incarcerated in 6 facilities in 4 States. In the Sheley and Wright study, 35% of the juvenile inmates reported that they had owned a military-style automatic or semiautomatic rifle just prior to confinement.

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## Note

Data in this report from the 1993 National Crime Victimization Survey are the first released on this topic since the survey was redesigned. Because of changes in the methodology, direct comparisons with BJS's victim survey data from prior years are not appropriate. Additional information about the survey's redesign can be obtained from the Bureau of Justice Statistics Clearinghouse at 1-800-732-3277.

The Bureau of Justice Statistics is the statistical arm of the U.S. Department of Justice. Jan M. Chaiken, Ph.D., is director.

BJS Selected Findings summarize statistics about a topic of current concern from both BJS and non-BJS datasets.

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*Guns Used in Crime* is the first of a series of reports on firearms and crime that will become part of a longer document, *Firearms, Crime, and Criminal Justice*. Other topics to be covered in this series include weapons offenses and offenders, how criminals obtain guns, and intentional firearm injury. The full report will focus on the use of guns in crime, trends in gun crime, consequences of gun crimes, characteristics of offenders who use guns, and sanctions for offenders who use guns. This report will not cover the involvement of firearms in accidents or suicides.